THE IRON TRADE REVIEW

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THE WEEK IN IRON CIRCLES.

THE MARKET AT LARGE.

Another week has passed in which the iron trade has been busier watching developments than in buying and selling. The meeting of the Southern furnacemen and their decision on prices, the action of pig iron producers in three sections in definitely planning to cut down production; and finally the cutting in two of the dividend on the common stock of the United States Steel Corporation, combined to make the week eventful. Meantime business has waited. We estimate the probable curtailment of pig iron production in the last quarter of the year through concerted action at close to 925,000 tons. This counts on 750,000 tons from the restrictive program of Central Western furnaces and 175,000 tons from the Southern and Eastern furnaces, provided the Eastern furnaces continue through November and December the 20 percent reduction planned for October. Other furnaces apart from those in the three agreements have either blown out or will bank or blow out on their own initiative; so that, assuming the disappearance of imports, there will be an adjustment to a consumptive demand at an annual rate about 5,000,000 tons less than in the past twelve months. This would seem to allow for a greater shrinkage than the change in the country's business thus far calls for. But this is a matter on which the next three months will doubtless throw much light. The situation as to Southern iron has been complicated by some moves made in advance of the action of the association meeting at Birmingham. While the meeting reaffirmed the $11.75 Birmingham basis for No. 2 foundry iron, it appears that buyers in Central and Western territory were led to expect the removal of the $1 differential against those sections and in favor of the East, offers on a $10.75 Birmingham basis appearing in various quarters. The result has been considerable confusion, the only official change in the situation being the 50-cent reduction in freight rates to the Ohio river, effective Oct. 10. There has not been enough buying in the week to make the market clear, but $10.50 and $10.75 iron is not plentiful, and it remains to be seen whether the 25 percent reduction in output decided on by Southern association furnaces will enable them to work off accumulated stocks at current prices. The steel market has been without feature, less being heard of billet prices below those agreed upon. There is no market for Bessemer iron, which can be had at $15.50 Valley furnace. Northern foundry iron is irregular, being generally at $14.50 to $14.75 for No. 2 at furnace. A result of the curtailment movement of the furnaces is lessened shipments of Lake Superior ores, which up to Oct. 1 were 1,400,000 tons less than to the same date last year, and promise to be fully 2,500,000 tons less than the 27,500,000 tons total for 1902. The finished material market shows little activity. Chicago reports 10,000 tons of heavy rails sold, with inquiries pending for 20,000 tons more. The American Bridge Co. has taken orders for 20,000 tons of material and has some good prospects for the month. Several season contracts for merchant steel have been closed by Western implement and vehicle manufacturers. Independent wrought pipe and tube interests have decided to make no reduction beyond 2½ percent from the prices of the National Tube Co., which is well supplied with contract business. The prospect of labor trouble in the sheet mills has been exaggerated, and it appears that the dispute over limits upon output is chiefly in the ranks of the Amalgamated Asociation. Foreign markets are again disturbed over the expected American invasion, and there is some reason.

PITTSBURG.

OFFICE OF *The Iron Trade Review*,
429 PARK BUILDING, Oct. 7.

Merchant and steel works furnaces of the Central West will curtail production until the end of the year 25 percent. This decision was arrived at by the committee appointed at the meeting of blast furnace operators held in this city last week. The committee meeting was held in the offices of the Carnegie Steel Co. yesterday afternoon. The committee announced that furnaces with an annual output of 12,000,000 tons will curtail their production one-fourth from Oct. 1 to the end of the year, the curtailed production thus amounting to 750,000 tons. None of the stacks are required to bank or shut down for any stipulated period, as long as the production is reduced as decided upon. A furnace may bank for periods of one week to ten days during each of the remaining months of the year, or it can shut down for a continuous period to cut off the required tonnage. Where a plant contains four stacks, it will be far more economical to blow one out entirely until the end of the year, thus cutting off the required tonnage. On the other hand furnaces making iron for steel plants taking direct metal will be permitted to operate continuously so as not to interfere with the steel-making operations, so long as the production of other furnaces of the steel works is cut off to make up the required tonnage.

It was also announced that furnaces in Alabama and Tennessee having an annual output of 1,322,000 tons will reduce their production 25 percent during the last quarter of the year. At a meeting of the associated Southern blast furnace operators held at Birmingham, Ala., last week it was decided to curtail to this extent, but as a full representation of the furnace interests desired was not present, further co-operation was sought with the result that stacks having the tonnage stated above have agreed to this proposition. The curtailed production at Southern stacks will amount to about 85,000 tons. It is probable that similar action will be taken by Eastern furnace operators, who last week decided to curtail 20 percent during the month of October alone. If this action is taken the total reduction of output will be about 925,000 tons in the three months. Furnaces in the Central West that will curtail 25 percent are located as follows: Northwestern Pennsylvania, Pittsburg district, several stacks east of Pittsburg not directly in the Pittsburg district, Mahoning and Shenango Valleys, Wheeling, Cleveland, Columbus, and Ashland, Ky., districts and the Hanging Rock region in Ohio.

The Southern roads have at last acceded to the request of the Southern furnace operators for a lower freight rate to Ohio river points and the reduction is 50 cents a ton.

It is expected that a further reduction of 20 cents will be granted by Northern roads from Ohio river points, which would mean a rate of $4.15 to Pittsburg from the Birmingham, Ala., district. As the 20-cent reduction has not been made, the rate from Oct. 10 will be $4.35. At a meeting of the Southern blast furnace operators held on Monday, $11.75 was reaffirmed as the basis for No. 2 at Birmingham. The additional charge of 25 cents per ton on small tonnages was done away with entirely.

The steel and finished material markets continue very quiet and show no noticeable change from previous weeks. Buying continues almost entirely in small lots for prompt delivery and the pressure for lower quotations on some of the finished steel lines becomes greater.

Pig Iron.—While a number of furnaces in this district are holding their iron at prices considerably above the low quotations of some of the sales noted during the week, they are not disposing of it except where their brands have long been used and are insisted upon. We note the sale of one lot of 175 tons of No. 2 at $15.10, Pittsburg, while several carload lot orders have been placed at $15.25. A few sales have also been made at $15.50 and one sale is noted at $15.75 of a brand usually carrying a price somewhat above the general market quotations. Gray forge has touched $14, but this market is almost nominal as there is practically no demand. Local foundries and iron works are showing little disposition to cover for future requirements and as fully 35,000 tons of iron is yet to be delivered in this district on old orders, it can be seen that there will be no heavy buying for some time to come. There is no demand for either Bessemer or basic and the former is held nominally at $15.50 to $16 at the furnace. We revise quotations as follows:

Bessemer, Valley	$15 50 to 16 00
Bessemer, Pittsburg	16 35 to 16 85
No. 1 Foundry	15 75 to 16 00
No. 2 Foundry	15 00 to 15 50
Gray Forge, Pittsburg	14 00 to 14 50
Chilled Basic, Valley	15 50 to 15 75
Chilled Basic, Pittsburg	16 35 to 16 60

Steel.—Few orders for billets or sheet and tin bars are being placed and the steel works are running exceedingly slack. We make the following quotations: Bessemer billets 4x4 inches and slabs up to and including .25 carbon, $27, Pittsburg, Wheeling or Valley, Johnstown, Ashland, Ky., Ironton, O., and Lorain, O.; .26 to .60 carbon, $1 advance, and .61 to 1.00 carbon, $2 advance; open-hearth billets up to and including .60 carbon, $28, and over .60 carbon, $29; billets smaller than 3⅞-inch and sheet and tin bars are $1 per ton extra; Bessemer rods, $35.50 to $36 and open-hearth are held at $1 advance.

Ferro-Manganese.—Domestic 80 percent is held at $49 per ton, delivered, at buyer's mill in car load lots. On a desirable contract this price could no doubt be shaded.

Spelter.—There is no change in the spelter market and we quote prime Western grades at 5.73½c to 5.75c in carload lots, delivered, Pittsburg.

Muck Bar.—There is little demand and the offerings are very light. The market is nominally held at $28 to $28.50.

Skelp.—While offerings of small lots of skelp have been made during the past two weeks at extremely low prices, the best that could be done on 3,000 tons of iron skelp was 1.65c, Pittsburg. On this basis sheared would be held at 1.70c to 1.75c. Steel skelp is held at 1.60c to 1.65c for grooved and 1.70c for sheared.

Rails and Track Material.—No new orders for rails have been placed in this district for some time for delivery next year and the railroads appear to be waiting for an easier money market before contracting further. We make the following quotations: Standard sections, 50 pounds and over, in lots of 500 tons and over, $28; car lots and less than 500 tons, $30; less than car lots, $32; light rails, 8 pounds, in carload lots, $39; less than carload lots, $40; 12 pounds, $32 to $32.50; 16 and 20 pounds, $30.50 to $31; 25 to 40 pounds, $30. Track material: Spikes, 2.05c to 2.10c; track bolts, square heads, 2.05c; hexagon heads, 2.65c; fish plates, 1.60c on orders accompanying large rail contracts, otherwise 2c to 2.10c is asked.

Plates.—The plate market continues exceedingly quiet and it is reported that slight concessions are being made by mills that are not now in the association. We quote as follows: Tank plates, ¼-inch thick and up to 100 inches in width, 1.60c at mill, Pittsburg; flange and boiler steel, 1.70c; marine, ordinary firebox, A. B. M. A. specifications, 1.80c; still bottom steel, 1.80c; locomotive firebox, not less than 2.10c, and it ranges in price to 3c. Plates more than 100 inches, 5c extra 100 pounds. Plate 3-16 inch in thickness, $2 extra; gauges Nos. 7 and 8, $3 extra. These quotations are based on carload lots, with 5c extra a hundred pounds for less than carload lots. Terms, net cash, in 30 days.

Bars.—A fair tonnage of steel bars continues to be taken by local mills on small orders for prompt delivery. There is practically no buying for future requirements. The iron bar market continues very quiet and low prices continue to be made. We quote as follows: Bessemer steel bars, 1.60c; open-hearth, 1.70c; plow beams and cultivator beams, 1.60c, net; channels, angles, zees and tees, Bessemer, under 3 inches, 1.70c; over 3 inches, 1.80c; common bar iron, 1.50c to 1.55c, Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds of a size and not less than 1,000 pounds, 10 cents advance; less than 1,000 pounds of a size, 30 cents advance. Hoops and bands are quoted at 1.90c, full extras, in 250-ton lots and over, and 2c in less than 250-ton lots.

Structural Material.—Not much new business is being placed, although it is stated that considerable is in view and will be placed before the end of the year. We quote: Beams and channels, 3 to 15 inches, 1.60c; 18 to 24 inches, 1.70c; tees, 1.65c; zees, 1.60c; angles, from 3 to 16 inches, 1.60c; universal mill plates, 1.60c.

Sheets.—The demand for sheets continues fair and the independent mills continue to shade prices quoted by the largest producer. The trouble between the Amalgamated Association and the American Sheet Steel Co. over the operation of the New Philadelphia, O., plant has been greatly exaggerated and will not result in a general strike as has been intimated. Black sheets in 500-bundle lots and over are as follows: No. 28, 2.65c to 2.70c; No. 27, 2.55c to 2.60c; No. 26, 2.45c to 2.50c; Nos. 22 and 24, 2.35c to 2.40c; Nos. 18 and 20, 2.25c to 2.30c; Nos. 14 and 16, 2.15c to 2.20c; Nos. 10 and 12, 2.05c to 2.10c. Galvanized: No. 16, 2.55c to 2.60c; No. 18, 2.80c to 2.85c; No. 26, 3.30c to 3.35c; No. 27, 3.55c to 3.60c; No. 28, 3.80c to 3.85c; No. 29, 4.30c to 4.35c; No. 30, 4.45c to 4.50c.

Wire and Wire Nails.—The wire and wire nail trade continues very good and the fall demand is fully up to expectations. The cut nail trade is also reported heavy. We quote as follows: Wire nails, carload lots, to jobbers, f. o. b. cars, Pittsburg, $2; plain wire, carload lots, $1.90; barb wire, carload lots, $2.30; staples, carload lots, $2.20. Galvanizing 30 cents extra. Carload lots to retailers are held at 5 cents advance in all lines, and on less than carload lots a further advance of 10 cents is charged. Steel cut nails are quoted as follows: Carload lots, $2.15, and less than carload lots, $2.20, f. o. b. Pittsburg, plus freight to point of destination. Iron cut nails are $2.25 in carload lots and $2.30 in less than carload lots. Terms, 60 days, less 2 percent off in 10 days.

Merchant Steel.—The number of orders received during the month of September for the finer grades of steel was much larger than during either July or August. However, the specifications in almost every instance call for small amounts for immediate delivery. We quote as follows: Turned cold rolled and ground shafting, 47 off in carload lots and 42 percent off in less than carload lots. Tire steel, 2.15c to 2.25c; spring steel, 2.25c to 2.35c; toe calk, 2.30c to 2.40c. Tool steel is quoted 7 cents and upwards, according to the grade.

Pipes and Tubes.—At a meeting of the independent pipe interests held in this city last week it was decided to make no reductions below 2½ percent from the National Tube list. This action has not affected the National Tube Co., however, as its prices throughout the past year have been moderate and were very low at times when much higher prices could easily have been secured. We quote as fol-

lows in carload lots to consumers, f. o. b. Pittsburg, plus freight according to Tube Rate Book to destination:

MERCHANT PIPE.

	Steel Pipe. Black. Percent.	Galv. Percent.	Wrought Iron Pipe. Black. Percent.	Galv. Percent.
⅛, ¼ and ⅜ inch	68	58	65	55
½ inch	70	60	67	57
¾ to 6 inch	75	65	72	62
7 to 12 inch	69	59	66	56
Plugged and Reamed				
1 to 4 inch	73	63	70	60
Extra Strong Plain End				
⅛ to 8 inch	67	57	63	53
Threads only	66	56	62	52
Threads and Couplings	65	55	61	51
Double Extra Strong Plain End				
½ to 8 inch	59	49	55	45
Threads only	58	48	54	44
Threads and Couplings	57	47	53	43

NOTE.—Orders for less than carload will be charged at 12½ percent advance. Extra and Double Extra Strong Cut Lengths, lower random discounts by 10 percent net for 6 feet and longer, and 15 percent net for 3 to 6 feet.

BOILER TUBES.

Steel.

	Percent.
1 to 1½ inches	45
2¼ to 5 inches	62½
1¾ to 2¼ and 6 to 13 inches	62½

Iron.

	Percent.
1 to 1½ inches	36½
2¼ to 5 inches	45½
1¾ to 2¼ and 6 to 13 inches	35½

CASING.

	S. and S. Percent.
2 to 3 inches	58
3¼ to 4 inches	60
4¼ to 12½ inches	62

Old Material.—The old material market continues in a demoralized condition and all kinds of prices continue to be quoted. It is principally a dealers' market, as the latter are buying up all of the low-priced offerings and are holding for a higher market. Not many of the mills are selling their material at the prices that are being offered, while the offerings of the railroads are very light.

Coke.—At the present writing there are nearly 2,000 ovens banked in the Connellsville region and it is probable that this number will be greatly increased before the end of the month, when furnaces begin to curtail requirements in keeping with the pig iron curtailment program. The H. C. Frick Coke Co. has 18 plants banked already with a total of 1,298 ovens. For the week ending Saturday, Sept. 26, the production of the upper region amounted to 215,126 tons, a loss of about 37,000 tons as compared with the production of the previous week. The output of the lower region amounted to 53,325 tons. Strictly Connellsville furnace coke is held at $2 to $2.10, while foundry is held at $2.75 to $3. Outside furnace coke is held at $1.50 to $1.75 and foundry at $2 to $2.50.

CHICAGO.

OFFICE OF *The Iron Trade Review*,
1115 MONADNOCK BLOCK, Oct. 6.

Following close upon the meeting of operators of Northern furnaces at Pittsburg a week ago yesterday, at which it was decided to decrease the production of pig iron in view of the weakness of the market, the association of Southern furnaces held meetings at Birmingham on Friday and Saturday of last week and discussed the same subject. It was decided to co-operate with Northern producers in the effort to prevent a large accumulation of iron, and to curtail the Southern output during the remaining three months of the year. The reduction thought necessary to meet the requirements of the situation was 25 percent per month of the tonnage produced in September, and this was agreed to. There was some difference of opinion at the meetings as to the best method to be pursued for increasing the demand and stiffening the market, one faction desiring lower prices and another a reduction in output; but in the end the plans of the latter were adopted. The association also reaffirmed the present schedule of prices. From the 10th of this month, however, the delivered price of Southern pig iron will be 50 cents a ton less than at present, owing to the announcement made a few days ago by Southern railways that after that date a reduction in the freight rate of this amount from Birmingham to the Ohio river would be made. The Northern roads have not yet taken any action, but it is believed that following the ratio heretofore established they will allow a reduction of 20 cents a ton from the river to all Northern points.

There has been very little buying of pig iron during the past week, many melters withholding their orders in anticipation of a change in prices from the meeting of the Southern association. There is a fairly good movement in finished material, the demand for sheets being particularly brisk. Contracts for heavy rails aggregating about 10,000 tons have been closed and there is inquiry for more than double this quantity, including one order for 15,000 tons. Plates and structural steel are quiet, though specifications are improving. Iron and steel bars are in fair demand in small lots. The difference of $5 a ton in favor of the former is working to the advantage of manufacturers of iron bars, consumers that have been using steel specifying iron wherever it can be used. Some season contracts for merchant steel have been placed by the implement and carriage trade during the week, and these have also bought heavily of bolts and nuts. The demand for merchant pipe in the larger sizes is good and prices are firm; but on lighter sizes trade is dull and circular quotations are being cut. Sales of wire products continue heavy, the entire output of mills going into immediate consumption. A good demand has been felt for billets, the week's sales including one order for 1,000 tons of Bessemer billets. Coke is scarce and selling freely. Contract shipments are being seriously delayed by the car scarcity in the Connellsville region and prices of spot fuel are advancing. The scrap market has improved in tone and buying has been heavier than for several weeks past.

Pig Iron.—Inquiry for pig iron is light and the announcement that production is to be curtailed does not seem to have caused foundrymen in this section any anxiety, judging from the small volume of business transacted during the week. Western melters had expected some concessions from the meeting of the associated furnaces last week, and the news that the present schedule was reaffirmed has resulted in the withdrawal of many inquiries that were pending. Sellers and buyers are almost a unit in the belief that until the $1 differential allowed Eastern foundrymen is generally granted to Western melters, as has practically been done in some instances, there will be no marked improvement in the local situation. Decreasing the output 25 percent will afford only temporary relief and enable those furnaces with large stocks to dispose of same, while a reduction of 50 cents or $1 a ton would immediately have brought on a buying movement. Independent furnaces have already got down to $11 Birmingham for No. 2 foundry, and several sales are reported at prices as low as $10.75 and $10.65. Carload orders continue to form the bulk of sales, all grades being in demand. One melter sent out an inquiry for approximately 2,000 tons of malleable Bessemer and No. 2 foundry, but it is regarded as only a feeler and no business is expected from it. A lot of gray forge amounting to nearly 1,000 tons was purchased by a local selling firm to apply on a number of small contracts, which is the only large sale of the week. There is little demand for Northern irons, and on a stiff offer prices could undoubtedly be shaded. A reduction of 50 cents a ton in the freight rate from Birmingham to the Ohio river has been made by Southern railways, making the rate effective after Oct. 10, $3.85, and we have revised our prices accordingly:

Lake Superior charcoal	$18 00 to 18 50
Northern Coke Foundry No. 1	16 50 to 17 00
Northern Coke Foundry No. 2	16 00 to 16 50
Northern Coke Foundry No. 3	15 50 to 16 00
Northern Scotch Foundry No. 1	16 50 to 17 00
Southern Coke No. 1	15 35 to 16 10
Southern Coke No. 2	14 85 to 15 60
Southern Coke No. 3	14 35 to 15 10
Southern Coke No. 4	13 85 to 14 60
Southern No. 1 soft	15 35 to 16 10
Southern No. 2 soft	14 85 to 15 60
Southern Gray Forge	13 85 to 14 35
Southern Silveries (4% to 5% silicon)	18 00 to 18 50
Southern Silveries (5% to 6% silicon)	18 50 to 19 00

Jackson Co. Silveries (6% to 8% silicon)	19 80 to 20 80
Jackson Co. Silveries (8% to 10% silicon)	20 80 to 21 80
Ohio Strong Softeners	21 00 to 22 00
Alabama and Georgia Car Wheel	24 85 to 26 85
Malleable Bessemer	16 50 to 17 00
Basic iron	15 35 to 15 85

Billets.—A sale of 1,000 tons of Bessemer billets was made to a Western consumer last week on the basis of official prices. Buying in small lots has been fair. We quote Bessemer billets, $28; open hearth, $29; forging, $32, carload lots, Chicago delivery. Forging billets out of store, $1.60 to $1.70 per 100 pounds.

Bars.—Demand for both iron and steel bars continues of fair proportions, though buyers are purchasing only in small lots. Specifications are also in good volume. We quote mill shipments, carload lots, Chicago delivery: Iron, 1.50c to 1.55c; Bessemer steel, 1.76½c; angles, less than 3x3, 1.86½c base; hoops, in lots of 250 tons and greater, 2.06½c; less than this amount, 2.16½c. Quotations from warehouse stocks: Iron, 1.75c for car lots, and 1.85c for less quantities; steel, 1.90c for car lots and 2c for less quantities, rates; hoops, 2.30c to 2.40c; angles, 2.10c rates.

Sheets.—The demand for both black and galvanized sheets continues to improve and prices are stiffening. We quote black sheets, mill shipments, f. o. b. Chicago: No. 27, 2.66½c to 2.76½c; No. 28, 2.76½c to 2.86½c. Galvanized from mill, carload lots, Chicago delivery, 75, 10 and 5 percent. On lots from store, we quote: No. 27 black, 2.90c to 3c; No. 28, 3.05c to 3.15c; galvanized 75 to 75 and 5 percent.

Plates.—The market continues dull, the only improvement noted being in the volume of specifications. There are no changes in prices to report. We quote mill shipments, Chicago delivery: Tank steel, ¼ inch and heavier, 1.75c; flange steel, 1.85c. Prices for lots from stock: Tank steel, ¼ inch and heavier, 2c to 2.10c; 3-16, 2.10c to 2.15c; No. 8, 2.15c to 2.20c; No. 10, 2.30c to 2.35c; flange steel, 2.40c to 2.50c.

Structural Material.—New business and specifications are both light, the decrease in railroad orders being the most noticeable. From warehouse stocks, there is a fairly good movement in small lots. We quote mill shipments, Chicago delivery, as follows: Beams and channels 16 inches and under, 1.75c; 18 inches and over, 1.85c; universal plates, 1.75c; angles, 3x3 and larger, 1.75c; tees 3x3 and larger, 1.80c; zees, 1.75c. Lots from store, 2.10c to 2.25c per 100 pounds, rates, cut to length.

Merchant Steel.—The implement and carriage trades continue to be the heaviest buyers, several season contracts having been placed during the week under review. We quote mill shipments, Chicago delivery, as follows: Spring steel, 2.65c to 2.75c; sleigh shoe, 1.95c; flat sizes, concave and convex, 2.25c; cutter shoe, 2.50c to 2.60c; machinery steel, 2.15c to 2.25c base; plow steel, 2.50c and upwards, according to quality; toe calk, 2.35c to 2.45c; out of stock, 3c to 3.10c; ordinary tool steel, 6c to 7c; special, 13c and upwards; less than carload lots, 5 and 10 percent higher; cold rolled shafting, carload lots, 47 percent off; less than carload lots, 42 percent off.

Merchant Pipe.—There is a good demand for the heavier sizes of pipe and mills are hard pressed to fill orders calling for quick shipment; but on the lighter sizes the market is dull and prices are being cut. We quote carload lots, mill shipments, random lengths, f. o. b. Chicago, as follows:

	Steel Pipe.		Guaranteed Wrought Iron Pipe.	
	Black. Percent.	Galv. Percent.	Black. Percent.	Galv. Percent.
⅛ to ¾ inch inclusive	66.35	56.35	63.35	53.35
½ inch	68.35	58.35	65.35	55.35
¾ to 6 inches	73.35	63.35	71.85	61.85
7 to 12 inches inclusive	67.35	57.35	64.35	54.35

Less than carload lots, 12½ percent advance over above prices.

Boiler Tubes.—Business continues to be of fair volume, jobbers and consumers buying steadily from week to week. Prices are without change, mill deliveries, carload lots, being as follows:

	L. W. Steel. Percent.	C. C. Iron. Percent.
1 to 1½ in.	43.35	38.35
1¾ to 2½ in.	55.85	35.85
2¾ to 5 in.	60.85	45.85
6 to 13 in.	55.85	35.85

For lots direct from warehouse stock:

	L. W. Steel. Percent.	C. C. Iron. Percent.
1 to 1½ in.	40	35
1¾ to 2½ in.	50	32½
2¾ to 5 in.	57½	42½
6 to 13 in.	50	32½

Cast Iron Pipe.—Orders for small lots are the rule, and these are numerous enough to form a good sized tonnage in the aggregate. Prices are weakening. We quote carload lots, f. o. b. Chicago, 4-inch pipe, $30; 6-inch and upwards, $29; gas pipe, $1 a ton higher.

Rails and Track Supplies.—Sales of standard sections amounting to a total of 10,000 tons have been made during the week, and inquiries received for approximately 20,000 tons. Demand for light rails and track supplies has fallen off slightly, due largely to the heavy buying of the weeks previous. We quote standard sections, 500 tons and over, $28; less than 500 tons to carload lots, $30; less than car lots, $32; second quality rails, $27; 25-pound rails, $31 to $32; 12-pound rails, $34 to $35, with regular differentials for intermediate sizes. Track supplies, mill shipments: Angle bars, 1.00c to 2c; spikes, first quality, 2c to 2.10c; (out of store, 2.25c to 2.35c rates, carload lots) second quality, 1.80c to 1.90c; track bolts, 3½x¾, with square nuts, 2.75c to 2.85c per 100 pounds; with hexagon nuts, 2.90c to 3c, with usual differentials for other sizes.

Wire and Wire Nails.—There is no diminution to be noted in the demand. Jobbers' stocks are reported to be low and such concerns are specifying heavily for the replenishment of same. We quote prices to jobbers, Chicago delivery: Wire nails, carload lots, $2.20; less than carload lots, $2.30. Cut nails, steel, carload lots, $2.26½; less than carload lots, 2.36½. Plain wire, $2.10 carloads, and $2.20 in small lots; galvanized, carloads, $2.40; smaller lots, $2.50. Barbed wire, carloads, $2.50; less than carloads, $2.60; galvanized, carloads, $2.80; less than carloads, $2.90; staples, carloads, $2.30; smaller lots, $2.40; galvanized, carloads, $2.60; small lots, $2.70. Bale ties, 82½ and 5 percent discount f. o. b. Waukegan on straight carload lots. Poultry netting, 85 and 5 percent discount from list f. o. b. Joliet or DeKalb, with actual freight allowed not exceeding 50 cents per 100 pounds.

Coke.—The scarcity of cars in the Connellsville region has stiffened the local market and created an increasing demand for spot fuel. Melters are covering freely for their season requirements, being afraid of an advance in prices as a result of the car shortage. We quote standard 72-hour Connellsville, $2.75 to $3.25 at the ovens; 48-hour Connellsville, $2.15 at the ovens. Virginia and West Virginia grades, $5.15 to $5.40 Chicago.

Old Material.—There is a better demand for all materials, and the tone of the market has improved considerably during the week. Mills, however, are purchasing only in small lots, the condition of the pig iron and finished material markets not warranting any extensive purchases. Cast iron is probably the weakest of all forms of scrap due to the low prices asked for pig iron and the constantly declining market. We have revised several of our quotations, and quote dealers' selling prices, gross tons, as follows:

Old iron rails	$16 00 to 16 50
Old steel rails (mixed lengths)	13 00 to 13 50
Old steel rails (long lengths)	15 50 to 16 00
Relaying rails	21 00 to 22 00
Old wheels	16 50 to 17 00
Heavy melting steel	12 50 to 13 00
Mixed country steel	10 50 to 11 00

The following are selling prices for net tons:

No. 1 R. R. wrought	$14 00 to 14 50
No. 2 R. R. wrought	12 50 to 13 00
Shafting	14 50 to 15 00
Dealers' forge, No. 1	12 00 to 12 50
No. 1 busheling and wrought pipe	10 50 to 11 00
No. 1 cast	13 00 to 13 50
Heavy cast (300 pounds and over)	10 00 to 10 50
Agricultural malleable	12 00 to 12 50
Iron axles	17 00 to 17 50
Steel axles	14 50 to 15 00
No. 1 boilers, cut	11 00 to 11 50

Cast borings	5 00 to 5 50
Mixed borings, etc.	5 00 to 5 50
Wrought turnings	10 00 to 10 50
Machine shop turnings	10 00 to 10 50
Iron axle turnings	10 75 to 11 25
Steel axle turnings	10 00 to 10 50
Stove plate and light cast scrap	10 00 to 10 50
Old iron splice bars	14 25 to 15 00

C. E. Louis, formerly salesman with the Chicago office of Hickman, Williams & Co., and later with A. M. Crane & Co., Chicago, in charge of their pig iron department, has started in business for himself in the sale of pig iron, coal and coke. Mr. Louis will continue to have his office with A. M. Crane & Co., at 618 The Rookery, Chicago.

CLEVELAND.

OFFICE OF *The Iron Trade Review*,
1064 ROSE BUILDING, Oct. 6.

The ore movement for September shows a decided falling off as compared with last year, the decrease for the month being 710,441 tons and for the season to Oct. 1, 1,332,117 tons. In view of the trouble of the Pittsburg Steamship Co. with the masters and mates, which tied up fifty vessels for a few days, this showing is not surprising. The shipments to Oct. 1 were as follows in gross tons:

	1902.	1903.
Escanaba	4,067,300	3,352,989
Gladstone	70,266	56,354
Marquette	2,043,194	1,651,696
Ashland	2,771,721	2,295,274
Superior	3,113,933	3,185,230
Duluth	4,298,511	4,462,439
Two Harbors	4,343,685	4,372,511
	20,708,610	19,376,493

For the month of September the shipments were:

	1902.	1903.
Escanaba	736,981	503,518
Gladstone	11,217	15,698
Marquette	348,865	239,871
Ashland	472,482	344,615
Superior	605,64	500,493
Duluth	689,581	696,409
Two Harbors	792,310	646,035
	3,657,080	2,946,639

It will be noted that Duluth and Gladstone are the only ports which show an increase over September of last year. The furnaces are not now calling for ore as freely as they did, there is a general reduction of mining forces in the Lake Superior district, and it is safe to predict that not over 25,000,000 tons will be shipped this season.

Pig Iron.—The most interesting event of the week has been the issuing of a circular by an agency for Southern irons, soliciting bids of $10.75 Birmingham for No. 2, which would be $14.60 Cleveland under the new freight rate of $3.85 from Birmingham. The circular caused much commotion, as it related to irons made by association furnaces and named a price $1 below the agreed price for the Central West. It is freely predicted that if the furnaces act in harmony with the sales agency in this matter, the Southern association will be disrupted. While $11.75 Birmingham is the price adhered to by at least some of the association furnaces, independent interests are reported to be selling at $1 a ton less. Few sales of Northern are being made except in small lots for prompt shipment. For such sales the Valley price is very near to $15, although better could doubtless be done on a large order. There are rumors of sales being made at slightly below $15 delivered in Cleveland. Buyers are canceling orders on slightest provocation. This is shown in the case of one furnace which sold foundry iron for delivery Oct. 1 and has been running on Bessemer. We quote as follows for Cleveland delivery, save on gray forge, which is at Valley furnace:

Bessemer	$16 35 to 16 85
No. 1 Strong Foundry	16 00 to 16 25
No. 2 Strong Foundry	15 25 to 15 75
No. 2 Foundry	15 00 to 15 25
Scotch No. 1	16 00 to 16 25
Scotch No. 2	15 25 to 15 75
Gray Forge, Valley furnace	13 50 to 13 75
Lake Superior charcoal	18 00 to 18 50

Finished Material.—The market continues quiet. Some mills report that they have about all the orders for bar iron that they can take care of, but others, especially local mills, are not so fortunate, and sales have been made at 1.40c at the mill, but mills making this price are not able to roll all sizes and some are declining to quote below 1.45c Youngstown. Steel is quiet and firm at the old prices, 1.60c for Bessemer and 1.70c for open-hearth. Recent contracts for three new vessels resulted in only small orders for plates, as the shipbuilding companies had a considerable stock on hand. The demand for boiler plates continues good and shows that many smaller concerns are prosperous. Dullness in rails continues on account of the inability of traction companies to finance their enterprises. Jobbers complain of slack business in nearly all lines, especially sheets, in which orders are few and competition keen. On sales made through jobbers, the prices of the principal producer are unchanged as follows: Galvanized sheets, mill sales, carload lots, Nos. 10 and 11, 2.60c; Nos. 12 to 14, 2.70c; Nos. 18 to 21, 3c; Nos. 22 to 24, 3.20c; Nos. 25 and 26, 3.55c; No. 27, 3.80c; No. 28, 4.05c; No. 29, 4.45c; No. 30, 4.95c. Galvanized sheets out of stock are quoted 75 and 5 off. For 3-16-inch black sheets and heavier we quote 2.15c, Cleveland. Mill sales of black sheets to consumers are made on the following basis: No. 24, 2.65c to 2.75c; No. 26, 2.75c to 2.85c; No. 27, 2.85c to 2.95c. The following are prices out of stock: No. 10, 2.35c to 2.50c; No. 12, 2.45c to 2.60c; No. 14, 2.50c to 2.60; No. 16, 2.60c to 2.70c; Nos. 18-20, 2.75c to 2.85c; Nos. 22-24, 2.85c to 2.95c; Nos. 25-26, 2.95c to 3.05c; No. 27, 3.05c to 3.15c; No. 28, 3.15c to 3.25c.

Old Material. Business is extremely dull. Machine cast and stove plate are weaker, with prices about 50 cents lower.

We quote the following, gross tons, Cleveland:

Old iron rails	$18 00 to 19 00
Old steel rails (over 6 feet)	16 00 to 17 00
Old steel rails (6 feet and under)	15 00 to 16 00
Old car wheels	17 00 to 18 00
Steel boiler plates	12 00 to 13 00
Malleable iron (railroad)	14 00 to 14 25
Malleable iron (agricultural)	12 00 to 13 00
Heavy steel	13 00 to 13 50

We quote the following net tons:

No. 1 R. R. wrought	$14 00 to 15 00
Mill scrap	14 00 to 14 50
No. 1 machine cast scrap	12 00 to 12 50
Iron axles	19 00 to 20 00
Axle turnings	12 00 to 13 00
Wrought turnings (free from cast)	10 00 to 10 50
Uncut wrought iron boilers	9 00 to 10 00
Grate bars	10 00 to 11 00
Pipes and flues (clean)	12 00 to 13 00
Tank iron	12 00 to 13 00
Hoop and band iron	9 00 to 10 00
Sheet iron	7 00 to 8 00
Wrought drillings	10 00 to 10 50
Stove plate	9 50 to 10 00
Steel axles	20 00 to 21 00
Cast borings	6 00 to 7 00

CINCINNATI.

Oct. 6.

The Southern Furnace Association took action at its meeting on Saturday reaffirming its schedule of $11.75, Birmingham, for No. 2 foundry, with a differential of $1 per ton in favor of Eastern markets. This was unexpected and has thrown the pig iron market into considerable confusion. It had been generally believed that the basis would be $10.75 or lower. Independent furnaces have quoted as low as $10.50 and the ruling price with the independents is still $10.75, Birmingham. Agents for the independent furnaces are now uncertain as to what course their furnaces will pursue under this change in the situation. It has been announced that freight rates from the South will be reduced 50 cents per ton on Oct. 10 and an effort will be made to secure a reduction in the rates north of the Ohio river as well.

It is understood that the Southern Furnace Association has also proposed to enter into an arrangement to reduce output. The plan is to take the production of the association furnaces for the third quarter as a basis and reduce the output for the last quarter 25 percent, which means that for October, November and December the association furnaces will limit their production to 75 percent of their production during July, August and September. A committee has been appointed to work out the details.

Lower prices are reported to have been made the past week in Northern Ohio irons and $14.75, Cleveland, is said to have been done. The coke market is easier, and $2.75 to $2.90, Connellsville, and $2.50 at Virginia and New kiver ovens are open quotations. Bar iron prices are lower than last week.

Pig Iron.—The developments of the week have caused trading to come to a halt until it shall be made clear what the independent furnaces will do in the light of the action of the association furnaces. Prices as low as $10.50, Birmingham, have been made in a very few instances and for prompt shipment $10.75 is still available, but on orders covering extended deliveries agents assert that they would submit such business to their furnaces before taking it on. All prices are now based on the new freight rates, which accounts for the reduction in quotations. There is but one large inquiry in the market, with specifications calling for from 6,000 to 10,000 tons of foundry iron, for extended deliveries. In the Ironton district $14.75 for No. 2 seems to be the ruling quotation. Very few orders of any kind are now coming in. Traveling agents report a rather light consumption of pig iron. The situation is very unsettled. The following are the prices current, f. o. b. Cincinnati:

Southern Foundry No. 1	$14 00 to 14 25
Southern Foundry No. 2	13 50 to 13 75
Southern Foundry No. 3	13 25 to 13 50
Southern Foundry No. 4	12 75 to 13 25
Southern Foundry No. 1 soft	14 00 to 14 25
Southern Foundry No. 2 soft	13 50 to 13 75
Gray forge	12 75 to 13 00
Northern Foundry No. 1	16 40 to 16 65
Northern Foundry No. 2	15 90 to 16 15
Northern Silvery (8% silicon)	18 65 to 19 15
Southern car wheel iron	26 25 to 27 25

Finished Material.—There has been a fair jobbing demand the past week, with an easy tone prevailing, but aside from a reduced quotation on bar iron, there is no quotable change in prices. Iron bars in carloads are now quoted at 1.53c to 1.55c f. o. b. Cincinnati. Steel bars remain at 1.73c base, half extras, with the retail price 1.90c for iron and steel out of store. Galvanized sheets are being quoted at 75 and 10 percent off. We quote black sheets No. 27 at 2.78c in car lots of 500 bundles. Black sheets out of store are selling as follows: No. 28, 3.05c; No. 27, 2.95c; No. 16, 2.55c; No. 14, 2.45c; No. 12, 2.40c; No. 10, 2.30c. Tank plates are firm and sell out of store at 2.05c for ¼-inch and 2.15c for 3-16-inch. Beams and channels are quoted at 2c from stock, and angles at 2c for base sizes. In merchant pipe the market remains unchanged. There is still a good demand for the large sizes and deliveries are difficult to obtain, but the smaller sizes are more easily available. Prices hold steady.

MERCHANT PIPE.

(Basing Discounts.)

	Steel Pipe. Black. Percent.	Steel Pipe. Galv. Percent.	Guaranteed. Wrought Iron Pipe. Black. Percent.	Guaranteed. Wrought Iron Pipe. Galv. Percent.
⅛, ¼, ⅜ inch	66.7	56.7	63.7	53.7
½ inch	68.7	58.7	65.7	55.7
¾ to 6 inch, inclusive	73.7	63.7	70.7	60.7
7 to 12-inch, inclusive	67.7	57.7	64.7	54.7

BOILER TUBES.

	Steel Percent.	Iron Percent.
1 to 1½ inch	41.2	35.2
1¾ to 2½ inch	54.2	34.2
2¾ to 5 inch	59.7	44.2
6 to 13 inch	54.2	34.2

Old Material.—No change is reported in price, but the market is dull and quotations are largely nominal. We quote:

Old No. 1 railroad wrought, net tons	$14 00 to 15 00
Cast machine and foundry, net tons	12 00 to 12 50
Old iron rails, gross tons	19 00 to 20 00
Old steel rails, gross tons	17 00 to 18 00
Old short lengths, gross tons	14 50 to 15 50
Old iron axles, net tons	20 00 to 21 00
Stove plate, net tons	9 00 to 9 50
Wrought turnings, net tons	11 00 to 11 50
Cast borings, net tons	6 00 to 6 50

PHILADELPHIA.

Oct. 6.

There is a better undertone to the market and while there is no probability that prices will be higher, it is believed that they will not be lower. There is some speculation as to whether proposed curtailments in output of pig iron will equal the decrease in consumption. It is impossible accurately to estimate the latter, but the disposition of furnacemen to get together in an effort to improve conditions is having a good effect.

Pig Iron.—Stock in consumers' yards are small and orders are accompanied by urgent requests for immediate shipment. This condition will be emphasized as curtailment proceeds, for deliveries may not be so prompt after furnace stocks are reduced. Old contracts are pretty well completed. Southern furnace representatives are aggressive. We quote: No. 1 foundry, $16.50 to $17; No. 2 X foundry, $15.50 to $16.25; No. 2 plain, $15 to $15.25; Standard gray forge, $14.50 to $14.75; ordinary, $14 to $14.25; basic, $14.50 to $14.75.

Steel.—The market is dull and weak. If pending negotiations for large lots are concluded, the price will be lower than has been recently quoted. It is believed that bids at $26 would not be turned down.

Finished Material.—One or two large orders for structural material have been placed, but the market in general is dull. We quote as follows delivered: Best refined bar iron, 1.50c to 1.60c; tank plates, steel, 1.75c to 1.80c; angles, 1.75c to 2c; beams, channels, for 15 inch and over, 1.75c to 1.90c.

Old Material.—The demand is irregular and prices rather uncertain. We quote: Old Steel Rails, $15 to $15.50; Miscellaneous Heavy Steel, $15 to $15.25; Low Phosphorus Scrap, $22 to $23.50; Old Steel Axles, $18 to $18.50; Old Iron Axles, nominal, $19 to $20; Old Iron Rails, nominal, $18 to $19; Old Car Wheels, nominal, $16.50 to $17; Choice R. R. No. 1 Wrought, $16.50 to $17.50; Country Scrap, $14 to 15; Machinery Cast, $14 to $15; No. 2 Light Scrap (Forge $13.50 to $14; No. 2 Light Scrap (Ordinary) $10 to $11; Wrought Turnings, $10.75 to $11.25; Wrought Turnings, choice heavy, $12 to $12.50; Cast Boring, $7 to $7.75; Stove Plate, $11 to $11.50.

NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1909, NO. 150 NASSAU ST., Oct. 6.

Pig Iron.—If there has been any change in the local pig iron market during the past week it was in the direction of increased tonnage. Now and then a buyer is found who is willing to purchase for extended delivery, but the majority of consumers are ordering only what they require for immediate use. The view is expressed by many buyers that any change in prices in the near future is likely to be in their favor, and hence their determination to adhere to a hand-to-mouth policy. Northern irons have become very unsettled as a result of recent developments. All sorts of prices are being quoted. Those given below are by leading sales agents in this city, although some prices going the rounds are nearly $1 lower. Some Northern furnaces making foundry pig are said to be disposed to change to Bessemer, claiming that foundry irons net little or no profit at present prices. Southern irons have not taken on any activity by reason of the 50-cent reduction in freight rate, although if some statements are to be believed they are now selling in this market below Northern brands. Southern No. 2 foundry is selling at $10.75 at Birmingham, although leading association interests claim they are getting $11 to $11.25 for their product. The movement to curtail production, which embraces all sections, has had no effect here so far, but it is thought it will do a great deal toward restoring confidence. The car situation as regards the delivery of coke is getting aggravating. New York prices are as follows: Northern No. 1 X foundry, $16.75 to $17.25; No. 2 X, $16 to $16.50; No. 2 plain, $15.50 to $16; Southern No. 1 foundry, $15.25 to $15.50; No. 2 foundry, $14.50 to $15; No. 3 foundry, $14 to $14.50; No. 4 foundry, $13.50 to $14.

Rails.—Railroads are reported as disposed to place some of their orders for next year during the present month. Standard sections continue $28 at mill.

Billets.—In domestic billets business is slow, with sales below pool prices reported. Foreign billets are receiving no attention, and we have been unable to find that any sales have been made.

Finished Iron and Steel.—Business has taken a slight start in structural material. The American Bridge Co. has closed contracts for 20,000 tons, and as soon as the papers are signed the details will be given out. Railroads asked bids of

the company a week ago for 8,000 tons, but after receiving them requested that they be resubmitted in a week or 10 days. The company closed contracts during September for 40,000 tons, which it regards as a normal business. Bridge interests are said to be willing to shade prices, in order to obtain orders. The Blackwell's Island contract will probably be placed this month. Iron bars are weaker, and are now selling in this vicinity at 1.50c. The market is all in favor of the buyer. Steel bars hold firm, but the belief that they must come down is growing. Plates are dull, with the search for orders becoming more earnest. Sheets are unchanged, and the demand is slow. New York prices are as follows: Beams and channels, 15 inches and under, 1.75c to 1.90c; angles, 3 to 6 inches, 1.75c to 1.90c; zees, 1.75c to 1.90c; bulb angles, 2.05c to 2.35c; deck beams, 2.05c to 2.25c; sheared steel plates, tank, 1.79c to 1.86c; flange, 1.90c to 2c; firebox, 2.10c to 2.20c; refined iron bars, 1.45c to 1.50c; soft steel bars, 1.70c to 1.75c; steel sheets, in carloads, New York, No. 28, 2.90c to 3c; galvanized, 75 and 75 and 2½ off.

BIRMINGHAM, ALA.

Oct. 6.

The Southern Pig Iron Association held two sessions here the past week—one Friday afternoon and one Saturday afternoon. The principal result of interest was the resolution adopted looking to a reduction in output equivalent to 25 percent of the expected product of the furnaces represented, during the present quarter, it being proposed that different furnaces shut down at different times for periods of three to ten days. By this plan the labor would not become disorganized and it is thought the desired results as to better business will follow. No reduction in prices was made, although it is, of course, understood that the buyer gets the advantage of the fifty cents per ton taken off freight tariffs, effective Oct. 10, as agreed upon by the Southern roads at a meeting of the traffic officials held in New York on the 1st inst. During the month of September shipments of iron were some better than in August, though practically every furnace company stacked a large portion of its September make, it being estimated now that the yards in the South show between 150,000 and 200,000 tons on hand. If production is reduced 25 percent, as proposed, it will be equivalent to cutting off 90,000 to 100,000 tons that had been counted in the estimate for the year's production in the South.

There is little likelihood of any additional furnaces being blown in this year unless the market shows a decided improvement.

The coal mines are all making good showings, with a fair demand for steam and domestic coal. Prices have varied but little in coal and coke for the past two or three weeks.

The Metal Market.

NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1909, No. 150 NASSAU ST., Oct. 6.

Pig Tin.—The market during the past week has been a fluctuating one, with prices at this writing higher, however, than a week ago. The monthly statistics, compiled by Secretary C. Mayer, of the Metal Exchange, were given a bullish interpretation. They showed the total visible supply to be 17,249 tons, as against 18,025 at the same time last year. Deliveries amounted to 3,200 tons, making the total increase for the first nine months of this year 4,500 tons over a similar period last year. The shipments from the Straits amounted to 4,465 tons, as against 5,215 tons the previous month. The London market during the week was strong, and prices advanced about £1½. Today's closing prices at the Metal Exchange were as follows: Spot, 26.00c to 26.35c; October, 25.05c to 25.35c; November, 24.90c to 25.12½c. London closed today as follows: Spot, £114 5s; futures, £114 15s. Arrivals at Atlantic ports for the month to date amount to 65 tons, with 3,240 tons afloat.

Copper.—The official quotations were twice reduced during the week, and are now ⅜c to ½c lower than those we quoted in our last report, with prices in the open market as much below again. This best tells the situation, which is one of extreme dullness. The export trade for the nine months ending September shows a decrease of 35,773 tons, compared with a similar period last year. The London market during the week was slightly stronger. Closing prices at the Metal Exchange today were as follows: Lake, 13⅜c; electrolytic, 13⅛c; casting, 12⅞c. London closed today as follows: Spot, £54 17s 6d; futures, £55 1s 3d. Exports for the month to date aggregate 661 tons, against 2,563 tons for the same period last year.

Lead.—Spot is scarce and strong at 4.50c. St. Louis is slightly higher at 4.35c. London is a shade stronger at £11 1s 3d.

Spelter.—Spot is scarce and sells at 6.00c, but futures are easy, with 5.70c for October, and 5.65c for November. St. Louis is firm at 5.60c. London is higher at £20 10s.

Antimony.—Cookson's is 7¼c, Hallett's 6¼c, and outside brands 5¾c to 6c.

Quicksilver.—Is quoted at $47 per flask of 76½ pounds in lots of 100 flasks. London is £8 7s 6d.

Nickel.—Is selling at 40c to 47c for large lots down to a ton, and 50c and 60c for smaller quantities.

CHICAGO.

OFFICE OF *The Iron Trade Review*,
1115 MONADNOCK BLOCK, Oct. 6.

The demand for copper and other metals improves slowly, due largely to the unsettled conditions in the iron and steel trade. The closing down of a number of sheet and tin plate mills has cut off considerable business, which has seriously weakened prices. Buying continues in small lots. We quote Lake copper, carload lots, 13⅛c to 13⅜c; casting, 13c to 13⅛c. Pig tin, carloads, 26¼c, lesser lots, 26¾c. Pig lead, 4.40c in 50 to 100-ton lots, and 4½c to 4¾c in small quantities. Spelter, 5.70c in carload lots, and 6c in small quantities; sheet zinc, 6¼c; antimony, 7½c to 8c, for both Cookson's and Hallett's.

The Reese-Hammond Brick Co., Bolivar, Pa., was placed in the hands of a receiver last week, the Westmoreland Savings & Trust Co. being appointed receiver. The indebtedness is placed at $600,000, while it is claimed that the liabilities will amount to $1,000,000. Inability to meet short time notes resulted in the receivership. It is believed that the matter can be adjusted satisfactorily in a short time and the company be permitted to resume operations. During the past two years the company has made extensive improvements and additions to its plants. A receiver has also been appointed for the Curwensville Fire Brick Co., of Curwensville, Pa., and the Hammond-Berkey Co. These two companies are closely allied to the Reese-Hammond Brick Co.

C. C. Moore, of Columbus, and other Ohio parties, have brought suit in the United States Circuit Court against the Jackson Iron & Tin Plate Co., of Clarksburg, W. Va., to appoint a special receiver and to enjoin the Board of Directors from leasing or disposing of the property. The assets of the company are: Real estate, $21,648; tracks and siding, $2,604; buildings and foundations, $169,034; machinery, $152,928; stores and fittings, $18,239; maintenance, $35,348; total, $394,804. The liabilities are reported as follows: Bank loans, $151,661; bonds, $125,000; stock, $119,971; notes and accounts payable, $15,673; total, $412,395. An injunction was granted.

Col. Douglas Putnam and Hay Putnam have tendered their resignations as president and general manager, respectively, of the Ashland Iron & Mining Co., Ashland, Ky. It has been rumored that the Cincinnati, Hamilton & Dayton Railroad has an option on the Ashland coal and iron road, owned by this company.

A rumor that the Chicago offices of the American Steel & Wire Co. will be moved from that city to Cleveland or Pittsburg has been widely published. It can be said that, while the advisability of such a move has been considered, definite action has not been taken.

The S. M. Shimer Co., Cleveland, dealer in old material, has elected the following officers: President, W. P. Johnson; treasurer and general manager, I. D. Laferty; secretary, L. G. Stockwell.

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OCTOBER 8, 1903

STEEL WORKS CAREERS FOR TECHNICAL GRADUATES.

In an editorial in *The Iron Trade Review* of June 26, 1902, on "The Steel Corporation and Technical Graduates," reference was made to a plan proposed by officers of the corporation for bringing into the service of its constituent companies, year by year, picked men from the graduating classes of the various technical schools. The idea first assumed tentative shape in a letter from James Gayley, first vice president, addressed to the presidents of a score of technical institutions in various parts of the country. There was practical unanimity in endorsing the proposal, and in nearly every case co-operation was promised in carrying it out. In April of this year it was decided to put the plan of Vice President Gayley into operation, and in June last 150 members of outgoing classes at leading technical schools were recommended to the corporation. Of these employment was provided in the past summer for between 40 and 50, and others are being placed as fast as there are desirable openings.

What the corporation expects from this departure is indicated in part in the letter of Vice President Gayley, referred to above, from which we quote as follows:

> The United States Steel Corporation is well provided with reserves of raw material; has splendidly equipped works and an efficient organization; but in the matter of organization we cannot, in the natural order of things, see as far into the future as we are able to with respect to raw material or equipment. As the equipment of brains and energy is just as important to this corporation we are desirous of working out some plan by which one or more of the most promising graduates each year, from the departments of chemistry, metallurgy, engineering, etc., in technical schools can be provided with employment in the constituent companies of this corporation, wherein they would have every opportunity to learn the practical and business side, and we would be securing the services of the best trained brains for the development of our manufacturing interests.
>
> As such men must compete for advancement with the young men who are a product of the works and largely self-educated (and who, I might say, are to be found no mean competitors), we want such as are practical in their judgment and have a plentiful supply of common sense. We want men of brains and ambition, who are disposed to devote their energy to industrial lines; men with potential energy and originality. We do not want men whose primary claim to recognition lies in the attainment of high term grades for recitation, as some men are quicker than others at absorbing information and reciting it, but not at digesting it. As many institutions have several technical departments it is not our desire to take each year the best student in each course; but considering the courses in the aggregate, it is our desire to secure from such aggregation one or more of the men having qualifications as outlined above, to place them in departments for which they have been specially trained, and to give them special opportunities for one year at a stipulated salary. The future will take care of itself. We want ability; will recognize it and pay for it.
>
> We would be pleased to have your views as to such a plan and any suggestions relating thereto.

It is to be noticed that the selection of men for the positions in the steel corporation's service which are open to technical school graduates, is not to be made on the basis of high marks for term work. Those who recommend their graduates for consideration in this connection are asked to pick out men who have shown some grasp of practical problems, some power of originality and initiative and an ability to do things. Discussion will long continue as to the relative value of technical school training and of works training in fitting men for high positions in industrial works; but the policy adopted by the world's greatest corporation can only be regarded as a high tribute to the work of the schools. Mr. Gayley intimates that there is one standard for the technically educated man and the man who is a product of the works—both must trust to their ability to bring things to pass, for their advancement. The young men who have gained most of their training from the shops that have given them their livelihood are referred to as no mean competitors of the school graduates. President Pritchett, of the Massachusetts Institute of Technology, in responding to Mr. Gayley's letter, shows full appreciation of the situation when he says:

> The time has gone by when the technically educated man expects to start in any higher up in his calling than the man who has not been so educated; but his education ought to enable him to learn quickly, to grasp new ideas with greater readiness, and to improve upon methods already in existence. This is, in fact, what the student gets out of his education; and, while the efficiency of such men will vary with individuality, nevertheless I am sure that by taking such graduates you will in the end bring together the most efficient body of men possible.

Doubtless the failure to appreciate what is expressed in the first sentence of the above extract is responsible for much of the friction that has come from the contact of school-trained and shop-trained men. The graduate too often has learned to think of himself as of a class apart from the mechanic and the latter is apt to contrast his faculty for doing things with the book-taught theories of the school man. But there has undoubtedly been an increasing respect of each of these classes for the other, and at the same time technical men, particularly those with a genius for originating and managing, have become more and more indispensable.

Particularly noteworthy in this far-sighted plan of the steel corporation for recruiting the ranks of its

engineering staff, is the answer it gives to the predictions that consolidation would do away with competition in brains and invention. No position in the official line, from president of the corporation or president of any constituent company down is out of the reach of the trained man who starts under the plan recently put in operation. More than this, the efficiency of administration in all the subsidiary organizations is guaranteed by a system under which every officer, manager or superintendent has his lieutenant or under-study. This guards against the crippling of the service by changes and prevents the creation of conditions making any man actually or in his own thought indispensable. While from one point of view the whole scheme appears to eliminate individualism, it in reality presents strong incentives to the individual in its certainty of promotion to the capable and its special recognition of the man who makes a new record.

THE STEEL RAILROAD TIE.

There will be a particularly rich reward for the inventor or designer of an entirely satisfactory steel railroad tie. Such a man will be spared many of the vexations which fall to the lot of the exploiter of a new idea where it is necessary, as a part of the pioneering work, to create a sense of need for it. The need for the steel tie exists and is recognized. The field is a particularly large one, as the demand for an entirely successful tie would run into millions of tons a year.

The rapid advance in the cost of the wooden tie is appreciated only by railroad managers who are forced to pay greatly increased prices year by year. Only a few years ago ties sold for 30 cents apiece. This year few if any have sold at 70 cents, and 75 cents has been freely paid. The dollar tie is so clearly discerned in the near future, that one road this year made an appropriation to buy a large lot of ties, which the management knows it cannot use before the season of 1905, but estimates that the interest on the investment will constitute but a small part of the enhancement in the market price in less than two years. It may be said further, that while the railroads are taking a hundred million ties a year, which will exhaust the actual available timber in the country in the not distant future, the enhancement in price now going on seems to be due not to this expected exhaustion, but to the mere fact that the timber now being cut down is farther and farther from streams or other transportation conveniences.

The problem is one of securing two factors, cheapness and suitability. The former is a movable factor, the latter a comparatively fixed one. So far, with the many designs which have been brought forth, the problem has been solved on neither point.

As the price of wooden ties advances, the requirement of cheapness will be less exacting. In view of the much longer life which the steel tie will certainly have, the problem of cheapness is not a very simple one. Iron ties have been used on the Continent for over 50 years. Steel ties might be subject to more oxidation, and have a shorter life, while the duty is harder in the United States. Assuming a given cost for a steel tie, one can figure how long it would be required to last. The wooden tie on main line track is replaced every eight years. The price next year can be taken at 80 cents. On a 6 percent basis all through, the interest charge is 4.8 cents and the sinking fund 7.6256 cents, to replace the principal in 8 years, making a total of 12.4256 cents annual charges per wooden tie. Assuming a steel tie to cost exactly twice as much, the interest charge would be 9.6 cents, leaving 2.86256 cents for sinking fund, which will replace $1.60 in a trifle under 25 years. This should be an entirely feasible life. Whatever the cost of the wooden tie, the rule will hold good that at 6 percent the steel tie costing twice as much must last 25 years if the wooden tie lasts 8 years. When wooden ties cost $1, steel ties may cost $2. But it is apparent that when one exceeds the ratio of double cost, the interest charge increases so rapidly as to soon reduce the balance for sinking fund to zero.

We have in mind a steel tie which has been used with considerable satisfaction on a half mile of main line track for some time. This tie is a simple rolled form, and weighs 175 pounds, so that to be but double the cost of an 80-cent wooden tie it must sell at $20.50 per gross ton. When the wooden tie has advanced to $1.31¼, this tie can sell at 1½ cents a pound, which would of course be entirely feasible. Meanwhile there is the chance of reducing its weight, or using a smaller number to the mile, which was not the practice in the experimental track referred to.

The natural cause of a continued advance in the cost of wooden ties will solve the problem of cost in a few years and the other problem is that of a suitable form, which does not seem to have been solved. Briefly, the difficulties are (1) Too much rigidity; (2) the greater injury to an exposed steel tie in case of derailment; (3) complication, including the introduction of nuts; (4) inability to provide, without undue complication, for replacement with rails of wider flange.

The attractiveness of the problem, even before a forced solution is reached, is evident from the fact that last year there were 266,000 miles of track in the United States, which at 2,800 ties to the mile means 750,000,000 ties. The railroads are spending $50,000,000 or more a year replacing these ties. To replace the total with steel ties weighing the equivalent of only 150 pounds of steel per wooden tie would mean 50,000,000 tons, equal to nearly two decades of rail production at the present rate.

That the time has come to call a halt in the campaign of strikes and kindred assaults upon prosperity is being borne in upon sundry persons who have been the chief instigators of the troubles of the past two years. The October issue of the *Machinists' Monthly Journal* says, for example:

> The industrial situation is changing and changing rapidly. There are not near so many jobs to be had now as there were a month ago, and the at one time too familiar sight of a man hunting a job is not so rare as it was at the beginning of the year. Double shifts and night gangs have been discontinued in many places, which throws a large number of men to the unemployed side of the labor market. There is usually a slacking up of rush which characterizes the summer's work with the falling leaves, but the lull is much earlier and more marked this season. The cause is difficult to determine. The *Journal* again wishes to emphasize the fact that owing to these changed conditions the greatest care must be observed by our membership in avoiding trouble. We have been very

successful in the past two years and have gained much, in shorter workdays, shop conditions and wages, and to hold all that we have gained will strain our organization to the utmost. Every endeavor must now be made to discourage further agitation for a higher wage and improved conditions at this time, to the end that our whole strength be conserved in preventing any backward movement. We must not be caught napping; the other side is on the alert.

It may occur to the man who is out of work the coming winter that possibly things would have been better for him if the leaders he has so cheerfully followed had thought of something like this before.

The feeling in the Lake Superior country over reductions in employment, especially in Michigan, is very different from that with which large retrenchments were received several years ago. No especial alarm is felt by merchants of such places as Ishpeming, Ironwood, Crystal Falls and Tower, where the chief curtailments have been. On the contrary, business men apparently think the reduction is temporary, and realize that the men retained in employment are proportionately greater consumers than those discharged. This is true, and the stable influence of such a concern as the United States Steel Corporation is recognized even by those who rail loudest against trusts. The difference in sentiment between now and 1894, for instance, is notable.

IRON AND STEEL IMPORTS AND EXPORTS.

The imports of iron and steel for August and for the eight months ending with August were as follows:

IMPORTS OF IRON AND STEEL TO THE UNITED STATES—GROSS TONS.

	August.		8 mos. end'g August.	
	1902.	1903.	1902.	1903.
Pig iron	79,447	40,475	257,210	530,972
Scrap	13,759	5,664	63,409	72,139
Bar iron	2,515	3,501	14,550	29,598
Iron and steel rails	1,988	9,347	23,463	85,077
Hoop, band or scroll	311	500	3,068	1,391
Steel ingots, slabs, billets or bars	39,027	20,380	161,231	229,680
Sheets and plates	365	1,200	4,256	6,838
Tin and terne plates	2,807	3,114	42,475	33,771
Wire rods	1,663	1,888	12,771	13,920
Wire and wire articles	232	383	2,312	3,278
Total	142,114	86,452	583,745	1,006,664

The total value of iron and steel imports for August, not including ore, but including some manufactures not named in the above table, is $3,440,100, against $4,123,314 in August, 1902. For the eight months the totals are: For 1903, $32,289,525; for 1902, $23,456,760. For the month the value of exports, not including ore, but including some manufactures not named in the table, was: 1903, $8,363,443; 1902, $8,641,525; for the eight months, $65,466,934 in 1903, and $65,904,829 in 1902. The following table gives the exports for the articles named:

EXPORTS OF IRON AND STEEL FROM THE UNITED STATES—GROSS TONS.

	August		8 mos. end'g Aug.	
	1902.	1903.	1902.	1903.
Pig iron	2,531	1,668	22,203	10,864
Scrap	519	349	6,759	2,928
Bar iron	350	1,565	16,861	13,979
Wire rods	5,014	2,122	14,751	18,360
Steel bars	747	650	7,006	13,252
Billets, ingots and blooms	464	214	1,794	1,019
Hoop, band and scroll iron	47	114	1,315	1,307
Iron rails	0	4	177	143
Steel rails	5,569	371	60,036	5,124
Iron sheets and plates	499	279	2,663	2,664
Steel sheets and plates	1,197	882	10,633	8,564
Tin plates, terne plates and taggers' tin	86	3	1,296	168
Structural material	3,904	1,525	41,848	20,670
Wire	7,114	7,570	66,864	70,121
Cut nails	542	844	5,098	5,739
Wire nails	2,700	2,134	17,694	20,407
Other nails, including tacks	248	173	1,257	1,468
Total	30,631	20,467	278,195	196,768

Considerable progress has been made by the American Steel & Wire Co. in grading for its railroad between Cleveland and Newburg. The company will not be able to get its bridges before Jan. 1.

The Labor Situation.

QUINCY, ILL., MOLDERS SETTLEMENT.

The disturbed conditions in the machinery foundries of Quincy, Ill., which have existed for some months were finally adjusted last week by the adoption of the following agreement between the Quincy Founders' Association and the local lodge No. 44 of the Iron Molders' Union. The members of the Quincy Founders' Association are the Gardner Governor Co., the Quincy Engine Works, the Quincy Corn Planter Co., the Central Iron Works, C. Bush & Sons, Reliable Foundry Co. and Modern Iron Works:

1. Beginning Sept. 28, 1903, the minimum wage rate for machine molders in the city of Quincy shall be $2.75 per day of nine (9) hours.

2. Nine hours shall constitute a day's work; by this is meant nine full working hours. Time and one-half shall be paid for all over time and double time for Sundays, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas. In cases of accidents or delays beyond our control, over time shall be paid for at the single time rate.

3. There shall be no restrictions or fines placed on a molder or coremaker for the purpose of preventing him in any way from putting forth his best efforts to produce the best quality and quantity of work and receiving compensation for the same.

4. Regulation of the apprentice system so as to compel apprentices to complete their term of four years, shall be mutually enforced.

5. For the benefit of aged and infirm molders, who are not competent to perform the average day's work, the founders may employ them at such rate of wages as may be mutually agreed upon.

6. Piece work shall be permitted in the shops of the Modern Iron Works and in such other shops as may engage in the manufacture of goods made elsewhere under the piece work system, provided the prices set enable fair molders to earn a wage not less than the minimum.

7. The minimum rate for journeymen coremakers shall be $2.25 per day of nine (9) hours. Existing shop conditions in the core rooms of the several foundries to remain undisturbed.

8. In such foundries as make wheel hubs, the right is given to employ for this work only, either journeymen molders or any other kind of help that the employers may elect.

9. During the life of this agreement no strikes or lockouts shall be ordered or sanctioned by either party to this agreement. Any disagreements or disputes arising shall be submitted to a committee of investigation or arbitration, to be composed of three members to be appointed by the association and three members to be appointed by the union. The decision of a majority of said committee shall be rendered within ten days from the date upon which the question shall have been submitted to it and shall be considered final in so far as the future action of the respective organizations is concerned.

10. It is understood that any national agreement that may be perfected between the National Founders' Association and the Iron Molders' Union of North America during the life of this agreement shall go into effect at once as between the members of these two associations, and that nothing in this agreement shall be understood as conflicting with any said national agreement.

11. No further demands are to be made on the founders who are members of the Quincy Founders' Association, and whose names are given below, during the term of this agreement.

12. This agreement to remain in force from Sept. 28, 1903, to Sept. 28, 1904, and to continue thereafter from year to year unless either party gives written notice thirty (30) days prior to any terminal date of its intention to terminate the agreement.

NO GENERAL STRIKE IN SHEET MILLS.

There will be no general strike, as has been intimated by the daily press, at the union plants of the United States Steel

Corporation, growing out of the action of the men affiliated with the organization at the New Philadelphia, O., plant of the American Sheet Steel Co. At this plant the men are working with no limit of output, which is a violation of the Amalgamated Association scale. The men are, however, doing this of their own volition and it is a matter to be adjusted between the Amalgamated Association officials and the lodge in this mill. A meeting of the officers of this lodge and the officials of the Amalgamated Association will be held in Pittsburg on Friday for the purpose of adjusting the differences, and if this cannot be done it is probable that the lodge will be suspended. That the American Sheet Steel Co. can be drawn into the difficulty under existing conditions is entirely improbable.

At Canton, O., the Stark Rolling Mill Co. has resumed operations with an increased output limit. This is another violation of the Amalgamated scale permitted by the organization's own members. A conference to adjust this matter will also be held on Friday.

The outcome will, no doubt, be another special convention of sheet workers in Pittsburg for the purpose of again considering the removal of the output limit and there is every indication that if such a convention is held the limit will be removed.

THE CARNEGIE CO.'S WAGE SCALE.

Regarding the proposed readjustment of wages by the Carnegie Steel Co. for 1904, Chairman Gary, of the United States Steel Corporation, has made the following statement:

"An old written agreement between the Carnegie Steel Co. and its employes provided that existing wages should be continued during each calendar year unless notice of cancellation or readjustment should be given three months prior to the beginning of the year, and this custom has prevailed ever since. Pursuant to this practice the usual notice has been given, so that, if deemed proper, adjustments can be made next January. The notice does not necessarily mean that wages will be decreased or increased in any particular line. The matter will be mutually considered at the proper time."

LABOR UNIONS RESPONSIBLE.

The Morse Iron Works & Drydock Co., Brooklyn, one of the largest concerns of its kind in the East, was closed Oct. 5 for an indefinite time. President Morse made the following statement:

"On account of continuous labor trouble and consequent losses, which commenced over a year ago, we have been compelled to close our plant. Last year we were working on contracts amounting to more than $1,000,000, employing about 2,200 men, and with a weekly pay roll of $23,000. The strikes commenced as soon as the unions discovered our yard was full of work and that we were bound under a penalty to complete our contracts on time. Had they planned to ruin our concern they could not have worked more systematically."

LABOR NOTES.

The Empire Steel & Iron Co., Oxford, N. J., and the Basic Iron Co., of Buttzville, N. J., have reduced the wages of their employes 10 percent, giving as the reason for making the reduction the low price of pig iron.

The strike of the Big Four boilermakers ended Oct. 2, the men being granted an advance of 2½ cents an hour. The company also makes some concessions as to apprentices.

The Louisville Bolt & Iron Works, Louisville, Ky., has decreased the wages of its employes 10 percent. About 500 employes are affected.

Officials of the Amalgamated Association and of the Youngstown Iron Sheet & Tube Co. will meet on Wednesday for the purpose of formulating a skelp mill scale.

President Frank Buchanan was re-elected at the meeting of the International Association of Structural Iron and Bridge Workers at Kansas City, the Parks candidate being defeated. Parks left for New York threatening that there would be a strike called at the East River bridge. President Buchanan declared that there would be no strike.

The strike still continues at the Jeffersonville, Ind., plant of the American Car & Foundry Co. Members of the union are doing picket duty to prevent any harm being done to the property of the car works.

In the investigation of the charge made by E. A. Rysdon, of Chicago, that a conspiracy existed between the contractors' association and the sheet metal workers' union, which resulted in the ruin of his business, Mr. Rysdon testified that he was fined $2,500 by the contractors' association and $500 by the union because he acted independently of those organizations. He placed in evidence a list of contracts in which pool money had been divided. On the Pullman Co.'s workshops, recently completed, he said the contract could have been carried out profitably for $20,000, but the company was forced to pay $45,000. An original bid of $7,500 for work on the Edison Co.'s plant, now in process of construction, he declared, had been submitted to the pool and had been increased to $15,500. Another witness testified that Knisely Bros.' original bid of $65,000 for sheet metal work on the Western Electric Co.'s machine shops had been raised to $90,943 and that each member of the combination had been promised $500.

Efforts are now being made to organize the 18,000 coke miners in the Connellsville region by organizers of the United Mine Workers. It is doubtful whether the move will be successful, however, as all efforts in the past have met with signal failure.

The Empire Steel & Iron Co., which operates two furnaces in Allentown, Pa., and four in Catasauqua, Pa., and the Thomas Iron Co., which operates four stacks at Hokendauqua, and two at Albertis, reduced the wages of their employes 10 percent Oct. 1. The reduction affects 900 men.

At the Lane & Bodley Co.'s foundry in Cincinnati, there has been no change in the strike, which started with the demand of the union that no non-union men be employed.

Representatives of the brass workers, of Chicago, and all the principal cities eastward have organized a new union to be known as the Independent Association of Brass Workers. The principal object of the association is to abolish strikes in the trade and to settle all disputes between brass workers and their employers by arbitration.

Julian Kennedy, Sahlin & Co., Ltd., of London, Eng., have recently received large orders for new iron and steel plant from Austria and Italy.

It is stated that a large plant is to be constructed in England for the renewing and re-rolling of rails by the American process employed at the Tremley Point, N. J., plant of the McKenna Process Co. A company called the English McKenna Process Co. has been formed in London for the purpose of building an operating the plant. Its capital is £220,000.

An official inspection of the properties of the United States Steel Corporation will be commenced next week by a party of corporation officials, headed by President Corey. The trip will include all of the company's mills and furnaces and will probably end with a tour of the ore properties in the Lake Superior region.

Announcement is made of the organization of the Yagle Foundry & Machine Co., Ltd., 32d Street and A. V. Railway, Pittsburg, which has taken up the business of Wm. Yagle & Co., Ltd., recently dissolved by limitation. The new firm, under the same management, will carry on a general foundry and machine business.

At a special meeting of the stockholders of the Angola Furnace Co., Angola, Ind., Fred W. Sheldon and Frank M. Powers were elected to succeed John J. Kinney and Wm. J. Kinney, who resigned. Mr. Sheldon will succeed W. J. Kinney as secretary and treasurer of the company.

PERSONAL.

Capt. W. H. Barnard, of the general offices of the Carnegie Steel Co., Pittsburg, has accepted the position of auditor of the Elyria Steel Co., Elyria, O.

Henry Heffrin, chief engineer of the Columbus Iron & Steel Co., Columbus, O., has resigned to go to Montreal, Can., as chief engineer of the Canadian Iron & Steel Co.'s plants.

An article by Paul Latzke in a recent issue of the *Saturday Evening Post* under the title "A Millionaire Mechanic," pays tribute to the mechanical skill, insight and faculty for achieving, which have been prime factors in the advancement of Alva C. Dinkey from telegraph operator at the Edgar Thomson rail mills under Captain Jones in 1883 to president of the Carnegie Steel Co. 20 years later.

Thomas F. Griffin, of Corrigan, McKinney & Co., started Oct. 6 for Concheno, Mex., to look after the company's mines at that place. He will spend about a month at El Paso, Tex., before going to the mining camp. Mr. Griffin will return to Cleveland next summer.

I. M. Scott, formerly connected with the New York office of the American Sheet Steel Co., has been appointed auditor of the LaBelle Iron Works, Steubenville, Ohio.

H. W. Hagerty, for a number of years secretary and general manager of the S. M. Shimer Co., Cleveland, has resigned to accept the position of sales agent with Corrigan, McKinney & Co., Cleveland. Mr. Hagerty will make the sales for the River furnace of that firm. He has been very successful in the scrap business and is being cordially welcomed by foundrymen, among whom he has a large acquaintance.

Oliver Phelps, after several years successful connection with the Lorain Foundry Co., Lorain, O., has resigned as general manager of that company to become Detroit manager of sales for M. A. Hanna & Co., handling the product of the Detroit Iron & Steel Co., whose furnace below Detroit will soon be blown in. The change will become effective Nov. 1. Detroit was Mr. Phelps's home before his engagement at Lorain and he has a wide acquaintance in business circles there.

Charles Hart, superintendent of the Bessemer plant of the Republic Iron & Steel Co., at Youngstown, O., has been promoted to the position of superintendent of all the plants of the company in the Mahoning and Shenango valleys.

President Frank J. Hearne, of the Colorado Fuel & Iron Co., is reported to be ill at Denver, blood poisoning having resulted from a slight injury received during a recent inspection of the company's properties.

AMERICAN STEEL PRODUCTS IN EUROPE.

German correspondence of the London *Iron and Coal Trades Review* indicates that the possibilities of American competition in steel products are already being discussed in Germany. What is stated in the letter confirms the recent announcement in these columns concerning the steps taken by the United States Steel Corporation to enter foreign markets in a way that has not been possible under the enormous home demand of the past three years. As might be inferred, the investigations thus far made have shown that British markets offer far less resistance to the entrance of American material than do those of Germany, with the protective duties that operate in favor of German steel manufacturers. However, there are other Continental markets in which American material may compete with that from Germany, and these and the British consuming centers will hear at no distant day from the plans recently set on foot to keep the mills of the United States busy in the interval of lessened home demand that has come upon the American iron trade. We quote from the letter to our London contemporary as follows:

"For many months the iron and steel market was perturbed, if, indeed, not in a state of trepidation, at the prospect of American competition in the Fatherland. Various Teutonic experts paid a visit to the United States in order to investigate the condition of affairs for themselves, but they returned not in any way alarmed at what the Americans might attempt in European markets. The publication of the views of these gentlemen was then followed by the issue by the German Government of an official statement pointing out that competition from the Americans is only possible at or below the actual cost of production, and submitting that there is no reason to be disturbed in regard to the matter. Yet, in spite of all trade and official assurances, reports possessing a high degree of probability are now in circulation, which are creating a considerable amount of disquietude. Various qualities of iron and steel are said to have been offered to merchants in the export trade, who, however, refuse to give any information on the subject. If these rumors are largely discounted, it is impossible to abandon the impression that the Americans are beginning to feel their way in anticipation of a further set-back in the United States. The offers are reaching Germany by mail, but it is easy to foresee recourse to the cable in case of developments. It is suggested that, instead of attempting to operate in foreign markets at any prices obtainable, it would be far better for the Americans to further restrict production in the States. This advice should preferably have been administered to Teutonic firms themselves during the past two years, and even at the present moment, with the extensions of works and productive capacity that are still in progress. Obviously the latter are becoming a little timid at the thought of having to face at home the same form of competition which they have offered in external markets for a long time past.

"The following table indicates the prices at Düsseldorf on the occasion of the last two exchanges:

	Sept. 17.	Sept. 3.
	s. d.	s. d.
German foundry pig No. 1.	67 6	66 6
German foundry pig No. 3.	65 6	64 6
White forge at Siegen....	56 0	
Foundry pig No. 3 at Luxemburg	52 0	52 0
German Bessemer	67 6 to 68 6	67 6
German hematite	68 6	67 6
Spiegeleisen at Siegen.....	67 0	67 0
Bar iron	110 0 to 120 0	110 0 to 120 0
Angle iron	110 0 to 112 0	110 0 to 112 0
Girder iron	117 6 to 122 6	117 6 to 122 6
Light sheets	137 6	137 6 to 142 6
Heavy sheets basic	140 0 to 145 0	140 0 to 145 0
Heavy sheets Siemens-Martin No. 1	160 0	160 0
Heavy sheets Siemens-Martin No. 2	140 0 to 145 0	—
Tank plates	145 0 to 150 0	145 0 to 150 0
Bessemer steel rails	135 0	135 0
Bessemer steel rails (rough)	130 0	130 0
Pit rails	105 0	105 0

"The association of German foundries, at the general meeting held at Cassel on the 18th inst., adopted a resolution recommending the members to introduce higher prices for castings as a result of the activity of the works and the increase in the prices of pig-iron, and especially as wages have not declined since the prosperous period of a few years ago. Various sittings have taken place of representatives of the Gas and Boiler Tube Syndicate, with a view to deciding upon an extension of the combination, but, so far, without result.

"If the Berlin syndicate of wire nail manufacturers does not maintain a force of inspectors or detectives it would be interesting to learn how it succeeds in discovering the existence of makers who do not belong to the combination. To unearth an outsider now and then may, perhaps, not be a difficult matter, and it is, of course, quite as easy to place the name of the offender upon the syndicate's black list for treatment in the well known German fashion; but to find out a dozen firms all at once is extraordinary. Yet the sales bureau of the syndicate has just issued a circular giving the names of twelve sinners, who have either partly commenced or propose to start the manufacture of wire nails. It is even more extraordinary how the intentions of those who have not already begun the business have become revealed. No wonder, with this increase in competition, that the inland and export trade, as the syndicate's circular points out, has recently become less satisfactory."

LAKE SUPERIOR IRON MINES.

The list of Lake Superior mines reduced in force or closed down entirely is about as follows: Vermillion range—Soudan mine closed, 500 men out. Mesabi range—nothing as yet, though of course steam shovel mines will be idle as soon as navigation ceases and some others will be curtailed. Gogebic range—Ironwood group of the Oliver Iron Mining Co., 500 men out; Ashland mine, 250 men out; other producers, 200 men out. Marquette range—Negaunee groups all running full; Ishpeming group, Oliver Iron Mining Co. has closed its Section 21 mine, also its Volunteer, and will shut down its Winthrop at the close of the shipping season, as it always does, but the close of shipping season from Winthrop is early this year. These three employed nearly 500 men. The same company's Section 16 mine, Lake shafts, and others, have been cut 190 men. The Cleveland-Cliffs Co. has cuts its Ishpeming mines by 370 men, most of whom come out of Cliffs and Lake mines. There will be a reduction in outlying portions of this range, though this is a small matter. On the Menominee range there is to be a cut at Crystal Falls mines, excepting two or three, the cut approximating, as nearly as can be ascertained, 400 men. Several small properties and explorations that have been on the point of closing down for some time will now be closed, letting out perhaps 250 men. These are chiefly development propositions that have been more or less hopeful, but have finally been passed upon, aside from any conditions other than those directly connected with their own appearance, as fruitless. Michigan will close, letting out 60 men. There will be a small cut at Chapin and possibly at Pewabic, possibly also later at Aragon. The number of men to be let out of these mines will be comparatively small, and cannot now be ascertained. Iron River group will be materially reduced, possibly by 300 men, and Cundy mine is closed, letting out 145.

This is not a net loss of as many men as appears, for many are finding work at other mines, and most will be employed near by.

The Minnesota Iron Co., which has been exploring lands belonging to Spellman and Daniels in section 6-58-15, has drawn off and dropped the option. This land has now been explored four or five times. The former operators found nothing, but the Minnesota Iron Co. found about 750,000 tons of excellent ore, running high in iron and low in phosphorus. The ore was, moreover, hard as any hard ore mined in the lake region. The total tonnage found was small, the surface is 200 feet thick, the ore lies adjoining a lake, with sand between it and the water, and crushing is necessary; so the work stopped.

Ore is said to have been found on the shores of Crooked lake, in section 25 T 58 R 17, southeast of the generally accepted line of ore-bearing formation. What ore is found has been below the lake's level.

Morris mine of the Minnesota Iron Co., which is being stripped by the Drake & Stratton Co., was to have made small initial shipments this fall, but will do nothing in that line before another spring.

International Harvester Co.'s Hawkins mine at Nashwauk will ship this year about 125,000 tons, and its Agnew about 100,000 tons. Both are in shape to produce heavily another year, if desired.

Exploration by Longyear & Hartley on State lands in sections 10, 11 and 12, T 58 R 19, has ceased. Since ore was found but not in paying quantities nor of high grades.

Exploration for iron ore is under way at points in both Aitkin and Crow Wing counties, Minnesota, near Lone lake, in Glen township, in the former, and at Deerwood in the latter, At Deerwood the explorers have put several holes in a ferruginous slate, running, in some assays, to 50 percent iron, but averaging far less, and they have cut a considerable quantity of paint rock. They say they are encouraged to believe they are at the edge of a considerable basis of ore. It is not generally supposed that anything as encouraging as the above has been found in Aitkin county. Options are given in the latter district on a basis of from 8 to 15 cents a ton.

E. J. Longyear, a leading drill contractor of the Mesabi range, has taken some contracts at Baraboo, Wis., and has located a branch office there with a resident engineer in charge. Minnesota drilling firms expect the Baraboo region to keep them busy for some time.

Monroe stripping work has started under the superintendence of the contractor, the Killorin-Philbin Co., which has taken the entire contract of 2,000,000 yards. It has one machine on the ground and will have another in a short time. The Minnesota Iron Co. is erecting dwellings and shops, and clearing land, and the location is a scene of the utmost activity. This new mine cannot make any shipments before 1905, for there is stripping to be carried on on a large scale, with three shafts to be sunk.

The Ashland mine, Gogebic range, has reduced its force one-half, throwing 250 men out of employment. The Ashland is the largest of the independent mines of the Gogebic range, and is operated by the Cleveland-Cliffs Iron Co.

The Grant, an Interstate Iron Co. property, located at Buhl, Minn., has closed for the season. The mine was opened about two years ago, and now has about 40,000 tons in stock, which will not be shipped this year. The Lincoln, operated by the same interests (Jones & Laughlin Steel Co.), will be one of the most active mines during the coming winter.

The Tobin and the Hennepin are the only mines in the Crystal Falls district that have cleared up their stock piles ready to start the coming winter season without any ore on hand. The system of working the Tobin is being changed from the underhand to the back stoping. The ore deposit is a large one.

American Boiler Manufacturers' Association.

The fifteenth annual meeting of the American Boiler Manufacturers' Association will be held at Chattanooga, Tenn., Nov. 10-13. Delegates representing nearly every large boiler maunfacturing concern in the United States and Canada will be present. The committee on entertainment of delegates is as follows: C. J. Hartman, chairman, Philadelphia; M. Lewellyn, secretary and treasurer, Chattanooga; F. R. Chase, Philadelphia; O. Duntley, Chicago; W. H. S. Baterman, Philadelphia; M. F Cole, Newnan, Ga.; George R. Lombard, Augusta, Ga.; A. D. Schofield, Macon, Ga.; John Rourke, Savannah, Ga., J. D. Smith, Charleston, S. C.; Daniel Shea, Memphis, Tenn.; J. F. Casey and M. G. Weidner, Chattanooga. The program for the entertainment of the delegates is as follows: Nov. 10, Tuesday afternoon—a trolley excursion over the city, and at night a card party. Nov. 11, Wednesday afternoon—Various manufacturing interests in the city will be inspected and in the evening a banquet will be given the delegates. Nov. 13, Friday—Trip to Chickamauga Park and lunch in the afternoon. The officers of the association are as follows: President, John O'Brien, St. Louis; vice presidents, Robert Monroe, Jr., Pittsburg; Samuel Borger, Columbus, O.; J. M. Robinson, Boston; M. F. Cole, Newnan, Ga., and J. F. Casey, Chattanooga; secretary, J. D. Farasey, Cleveland; treasurer, Joseph Wengler, St. Louis.

Statement by Southern Pig Producers.

At the close of a meeting of the leading makers of pig iron in the South held at Birmingham, Oct. 2, the following statement was given out: "At a meeting held today of a majority of the Southern pig iron producers it was suggested that, in view of the present overproduction, the output of pig iron in the Southern district be reduced approximately 25 percent of their respective capacities during the quarter ending Dec. 31, 1903, by the voluntary action of the producers."

Superintendent Charles Major in an address to the members of the Pencoyd Club, composed of employes of the Pencoyd Iron Works, Philadelphia, stated that the outlook does not appear as blue as it did a few days ago and expressed the hope that there would be more encouraging prospects in the near future. It is now hoped that the works will not be closed down in accordance with the program recently announced.

TRADE PUBLICATIONS.

A little folder bound in red, bearing the title, "Pig Iron —Red Short, Cold Short, Neutral," is published by Rogers, Brown & Co. to direct attention to the Virginia irons of the Alleghany Ore & Iron Co. There is a well told story of sulphur and phosphorus and of the curative action of high manganese pig iron. The Alleghany furnaces normally make an iron averaging 1.5 percent in manganese, though by careful selection of ores as high as 5 percent manganese has been reached.

Charles G. Shepard, 401 Ellicott Square Bldg., Buffalo, has sent out a pamphlet dealing with Globe pig iron, a well known Jackson County, O., softener. It is illustrated with large photographic reproductions of the 6 percent, 8 percent and 10 percent silicon grades of this iron.

A pamphlet from the Link-Belt Engineering Co., of Nicetown, Philadelphia, relates to shallow trough belt conveyors and coal and coke crushers. A number of excellent illustrations of elevating systems at work handling grain, coal, etc., are a pleasing feature of the pamphlet. Emphasis is placed upon the fact that the more nearly a belt conveyor approaches the old type of flat belt the longer it will last.

An air tool circular from the Rand Drill Co., of New York, has many halftones of these devices in actual operation. The work selected for illustration is typical but of a wide range and shows the tools employed on structural work, driving rivets in the shield of the new East River tunnel and for industrial purposes generally.

The monthly calendar for October from the Lumen Bearing Co., of Buffalo, is equal to any of the choice specimens of color printing previously sent out by the company.

Catalogue No. 4 of the Carborumdum Co., of Niagara Falls, N. Y., is worth preservation for several reasons. The manufacture and development of carborundum is entertainingly told in a reprint of a paper originally read before the Franklin Institute; other papers deal with carbide of silicon in the manufacture of iron and steel, the fifteen electrical furnaces, safety of wheels, characteristics of grinding wheels and much miscellaneous matter in regard to the industrial uses of carborundum. The pamphlet is an excellent specimen of typography and has numerous informing illustrations.

A talk on packing and an account of the "Cross Arm" tubular gasket forms the subject matter of a couple of circulars from the Republic Rubber Co., of Youngstown, O. The circulars are printed in colors and the description of packing peculiarities well presented.

Pamphlet No. 034 deals with the industrial railway of the C. W. Hunt Co., of West New Brighton, N. Y. The publication describes the construction of the railway and the general equipment available but also presents many illustrations of the application of this manufacturing convenience to foundries, machine shops, boiler plants, etc.

The Jeffrey power drills for coal and rock are excellently depicted in a recent catalogue of the Jeffrey Manufacturing Co., of Columbus, O. The pamphlet is not designed to offer an exhaustive description of the equipment made by the company but there is a wide range of variety exhibited and this is satisfactory as an indication of the further resources of the manufacturers.

Catalogue and price list No. 2 from Boynton & Plummer, of Worcester, Mass., treats of improved shaping machines; upright and power drills, the latter in many forms and sizes; bolt cutting and nut tapping machines; portable forges; tire benders; bolt headers; etc. A special circular describes vises of the swivel type as well as the more adjustable device made for toolmakers. The toolmaker's vise has a vertical movement through 55 degrees as well as a horizontal motion through the complete circle.

A desk calendar comes from the Diamond Saw & Stamping Works, of Buffalo, N. Y., and incidentally tells a few facts in regard to the cutting qualities of "Sterling" hack saw blades. A small catalogue is also to hand and goes more minutely into the merits of the saws (frames and blades) made by this firm.

A pamphlet from the Pierce, Butler & Pierce Manufacturing Co., of Syracuse, N. Y., is devoted to house heating boilers and radiators. The engravings have an especial charm and the work as a piece of trade literature is a pleasing specimen.

The Cincinnati Machine Tool Co., of Cincinnati, makes a line of drilling and tapping machines ranging from 21 to 42 inches swing. These tools are illustrated and described at some length in a recent catalogue and special attention is directed to the patent geared tapping attachment, a device which has appeared in the columns of *The Iron Trade Review*.

JOSEPH WHARTON ON IRON TRADE CONDITIONS.

Joseph Wharton, of Philadelphia, proprietor of the Wharton furnaces at Port Oram, N. J., and vice president of the American Iron and Steel Association, has given a newspaper interview on the present situation in the iron trade. He says:

"The apparently very high prices which ruled for pig iron in the early part of this year were not so profitable to the makers as might appear, for the reason that coke was extremely hard to get in adequate quantities, the quality was poor and the price was very high. Anthracite could, of course, not be obtained on any terms. The running of furnaces was interfered with, not only by this fuel famine but also by the labor troubles and the unsatisfactory conditions of the product arising from these facts combined with much higher cost, causing a number of furnaces to run at a loss notwithstanding the high prices pig iron then commanded.

"The improved conditions as to fuel supply later in the season resulted in a prompt increase in the output of iron while at the same time diminished urgency of demand began to appear. The buyers under these circumstances naturally withheld or delayed their orders, which caused, in some instances, considerable stocking of pig iron at the furnaces. This led, of course, to borrowing by some of the producers at a time when money was growing constantly scarcer and dearer. Under these circumstances the price of iron fell greatly, until it has reached a point at which a large proportion of the furnaces cannot make it except at a loss, though many of them are temporarily making some money by delivering iron sold at higher prices than now rule.

"The prospect for the future, which is, after all, the most interesting part of the problem, is that production will be curtailed and this curtailment is likely to go so far that the output will be less than the consumption; therefore, it seems safe to assume that the price of pig iron has reached and possibly passed the lowest point, so that somewhat better prices may reasonably be hoped for. This does not mean that we shall see anything like a return to boom prices, but it does mean that, with the diminished cost of fuel, the lower price of labor, and somewhat greater diligence on the part of the workmen, a moderate profit will be realized by the pig iron producers, unless money conditions should reach such a degree of tension as to stop enterprises in railroad building and improvements, the erecting of steel buildings, shipbuilding, and all the other various lines in which iron is used, thus causing a very heavy reduction below the normal demand for iron.

"The production of pig iron requires so large an outlay of money, not only for the cost of the plants, but for meeting all the numerous and pressing demands connected with its manufacture, that it feels very early and very seriously such stringency in money as now exists. It is quite possible, therefore, that a continuance of this stringency would force a number of establishments to close up, even if some small profit would appear to be obtainable by continuing work. Of course, this would result in the dismissal of many thousands of persons who are now enjoying good wages and sure pay.

"My remarks apply particularly to the Eastern region, with which I am naturally acquainted, rather than to the Middle and Western iron territories, but I believe they are largely applicable to them also."

CONSOLIDATED LAKE SUPERIOR REORGANIZATION.

Receiver John G. Carruth of the Consolidated Lake Superior Co. has issued a statement to its stockholders setting forth in substance the following:

The sale of the property of the company pledged with Speyer & Co., of New York, for the loan of $5,050,000, was to take place Oct. 1 but upon urgent requests, has been postponed until Oct. 8, at 12 o'clock. It is necessary that $250,000 should be immediately paid into the Equitable Trust Co., of Philadelphia, which will upon proper vouchers, liquidate the indebtedness of the Consolidated Lake Superior Co. or subsidiary companies. The payment of this sum will insure the further postponement of the sale for a period sufficient to enable the stockholders to accomplish reorganization. It is imperative that the stockholders should pay on or before Oct. 6 to the equitable Trust Co. an assessment of 50 cents a share.

The amount paid, $8,000,000, will, upon the adoption of the plan of reorganization, be raised by means of an underwriting open to all stockholders. This sum will repay the Speyer loan, the floating indebtedness of the company, all expenses of reorganization and leave about $1,000,000 for working capital. It will issue $10,000,000 first mortgage bonds, of which the underwriters will receive $7,143,000. The unused $2,857,000 of such bonds to remain in the treasury for the future use of the company. The bonds taken by underwriters are to be offered to all stockholders at 70 per cent with a stock bonus of 30 per cent. Stock in the new company will be offered to each stockholder upon making cash payment at reasonable times of $3 per share for old stock surrendered to the underwriters. One share of stock in the new company will be given for two shares of preferred stock of the old company and one share of new stock for four shares of common stock of the old company.

A voluntary committee of stockholders composed of John W. Moffly, William Arrott, Simon Grate, Charles W. Henry and Sam F. Houston has made public another plan which does not differ from the one proposed by Receiver Carruth except that it leaves to the receiver and original Rothermel committee the raising of $250,000 cash through proposed assessment of 50 cents a share. The plan proposes a new company to be called the Lake Superior Corporation, with capital stock of $40,000,000 and 5 percent bonds of $10,000,000. Underwriting syndicate is to provide $8,000,000 for financing new company by $3,000,000 stock assessment and $5,000,000 from sale of bonds.

At a meeting of the board of directors of the William Cramp & Sons Ship & Engine Building Co., Philadelphia, Oct. 2, Chas. H. Cramp tendered his resignation as president and was chosen chairman of the board, a new office. The following officers were elected: President, Henry S. Grove; vice president, Edwin S. Cramp; general manager, R. W. Davenport. In tendering his resignation, Mr. Cramp presented the following communication: "A desire for relief from some of the exacting and oftimes onerous duties of chief executive of this corporation, with its vast and complex business, and a desire to create conditions more favorable for my personal comfort, impel me to hereby tender my resignation as president. I need not assure you that my interest and efforts for the welfare of the corporation will not be terminated by this action.

The Hess Machine Works, Kendallville, Ind., is doing a large business in repairing machinery, boilers, engines, etc. Special attention is given to gas and gasoline engines, and in the near future the company expects to build gasoline engines. The company also manufactures rural delivery mail boxes and other specialties.

L. C. Bignall, organizer and principal owner for years of the Bignall Foundry Co., Medina, N. Y., died, Sept. 28, aged 75 years.

The Bessemer converting department of the Homestead plant of the Carnegie Steel Co., Homestead, Pa., has been shut down for an indefinite period.

DIVIDEND ON STEEL COMMON REDUCED.

At a meeting of the directors of the United States Steel Corporation, held in New York, Oct. 6, the dividend on the common stock for the last quarter was reduced from 1 percent to ½ of 1 percent. The action is said to have been unanimous and is referred to officially as due to falling off in business. The financial statement issued after the meeting shows a decrease of $4,642,688 (September estimated) for the third quarter of the calendar year, compared with the same period last year, and a decrease of $4,339,487 compared with the preceding quarter of this year. On Oct 1, 1902, the corporation had unfilled orders of 4,943,000 tons on hand. This year the unfilled orders on the same date amounted to 3,728,742 tons.

Nineteen of the 24 directors, including J. Pierpont Morgan, were present. John D. Rockefeller was among the absentees.

The statement of the corporation shows:

Net earnings for the nine months		$94,013,836
Sinking funds on bonds of subsidiary companies	$ 1,212,548	
Depreciation and reserve funds	10,589,596	
		11,802,144
Balance of net earnings for the nine months		$82,211,692
Interest on United States Steel Corporation bonds for nine months		13,448,475
Sinking funds on United States Steel Corporation bonds for nine months		2,875,000
Balance		$65,629,475
Dividends for the nine months—		
Preferred, 5¼ percent		$23,921,913
Common, 2½ percent		12,707,562
Undivided profits or surplus for the nine months		$29,384,742

United States Steel net earnings and dividends on the common stock for the four summer quarters of its history—

1901—$28,663,843	1 percent
1902— 36,945,489	1 percent
1903— 32,302,821	1½ percent
Yield of common stock at present market price and rate of dividend	11.8 percent

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The McCallum Steel Wagon Co., Plymouth, Ind., has purchased a plant with a large part of the equipment installed. There are some additions contemplated, but definite plans have not been agreed upon. It has been decided, however, to build a foundry, which will turn out steel water-proof wagon wheels.

The directors of the Otis Elevator Co. have decided not to pay an October dividend on the common stock. The earnings of the company for the past six months warranted the distribution of a semi-annual dividend of 2 percent, but so much work has been tied up by reason of the building strikes that it was decided to pass the dividend.

The iron works and marine railway of John Rourke & Co., Savannah, Ga., were destroyed by fire Oct. 3. The loss is upwards of $125,000, partly covered by insurance.

The American Tin Plate Co. has the following mills idle: Shenango, New Castle, Pa.; Pennsylvania, New Kensington, and the Humbert, at Connellsville, Pa. The Pope plant, at Steubenville, O., is also idle at the present time.

While no official statement has been made by the investigating board which heard charges preferred against President Shaffer, of the Amalgamated Association, it is reported that he was ordered reprimanded for his actions.

The United States Portland Cement Co., of Pittsburg, Pa., recently organized, has closed for the purchase of 62 acres of land two miles east of Connellsville, Pa. The plant will be erected on this site, which contains both limestone and clay. The capital of the company is $500,000.

The Omega Steel Co., whose principal offices and works are located at New Haven, Conn., is planning important extensions. Negotiations have been practically completed for the establishment of a steel mill at Allentown, Pa. The board of trade in that city has offered to give the company a desirable tract of land. Following the completion of the Allentown plant, the company proposes to establish tool shops at Worcester, Mass., San Francisco, Chicago and Cleveland.

SHOP TRIP OF PITTSBURG FOUNDRYMEN.

The first of a series of inspection trips to foundries located in the Pittsburg district was made on Monday evening, Oct. 5, to the plant of the Mesta Machine Co., West Homestead, Pa., by the members of the Pittsburg Foundrymen's Association. A special train over the P. & L. E. Railroad carried the large party directly to the works. Through the courtesy of the officials of the Mesta Machine Co. every facility was provided for a thorough inspection of this modern plant, which was described in *The Iron Trade Review* of Nov. 14, 1901. In addition to producing rolling mill machinery of every description, this plant is turning out the heaviest types of blowing, Corliss, reversing and mill engines and in the casting of the heavy parts many intricate problems in foundry practice must be overcome. After the inspection of the works and office, a lunch was served in the office dining room; nor was the musical end of the program overlooked.

The annual meeting of the association was held at the works and resulted in the election of A. W. Slocum, president; S. H. Stupakoff, vice president; J. S. Seaman, treasurer; F. H. Zimmers, secretary. The executive consists of Wm. Yagle, G. C. Schade, S. D. Sleeth, J. S. McCormick and D. J. Thomas. Program committee—A. O. Backert, chairman; E. D. Frohman and B. D. Fuller. The retiring officers were D. J. Thomas, president, and A. W. Slocum, vice president. The following were in attendance:

Wm. Yagle, Wm. Yagle & Co.
R. A. Walker, *Iron Age*.
James Lathwood.
J. A. Lathwood.
D. B. Adams, Hydraulic Machine Co.
D. J. Thomas, H. P. Spilker, Sterritt-Thomas Foundry Co.
Richard Muse, Marshall Foundry & Structural Works.
J. S. Campbell, Pittsburg Steel Foundry.
G. W. Knotts, Frank-Kneeland Machine Co.
A. Rosenberg, S. Obermayer Co.
J. F. Bitter.
E. D. Frohman, S. Obermayer Co.
F. D. Cope, Manufacturers' Association.
John Phillips, John McLaren, Phillips & McLaren.
K. D. Clark.
H. T. Irwin.
H. A. Marshall.
W. W. Clark.
James Fox, H. K. Porter & Co.
J. S. Malone, J. S. McCormick, J. S. McCormick Co.
W. R. Yagle, Wm. Yagle & Co.
Daniel Ackerman, Hydraulic Machine Co.
C. F. Menges, Taylor-Wilson & Co.
G. W. Stevens.
B. D. Fuller, Westinghouse Electric & Mfg. Co.
J. L. Orrell, Union Foundry & Machine Co.
C. F. Knowlton, Westinghouse Electric & Mfg. Co.
G. D. Fox.
A. B. Harrison, Clinton Iron & Steel Co.
W. R. Kneeland, United Engineering & Foundry Co.
John Quinn.
W. J. Brant, Rosedale Foundry Co.
T. McBride.
F. J. Gaw.
Wencel Veverka, Westinghouse Electric & Mfg. Co.
H. E. Johnson.
F. F. Fitch.
Mr. Webb, Thos. Evans, Monongahela Mfg. Co.
Wm. Bell.
Henry McEwan.
Wm. Stark.
Wm. Smith.
W. A. Harris, Lewis Foundry & Machine Co.
Thomas Wilson.
E. A. Kebler.
G. L. Claypole.
C. W. Jones, Rosedale Foundry Co.
J. A. Wise, Frank-Kneeland Machine Co.
W. C. Scott, H. S. Ridenour, Thos. Carlin Sons Co.
Fred Liepold, James Keegan, Frank-Kneeland Machine Co.
C. G. Smith.
F. E. Gordon, Ohio Sand Co.
J. H. Johnson, Valentine Legler, Wm. Yagle & Co.
W. J. Naeser.
H. S. Rae.
John Nusser, National Gear Wheel & Foundry Co.
James Early, J. W. Early & Sons.
H. J. Dorsey, Enterprise Foundry Co.
L. K. Brown, L. K. Brown & Co., Zanesville, O.
S. D. Sleeth, J. Hunter Sleeth, Westinghouse Air Brake Co.
G. C. Schade, W. C. Schade, Henry Gauerman, James Sloss, Chas. Westfield, Braddock Machine & Mfg. Co.
George Mesta, C. I. Mesta, F. E. Mesta, Harry Ow, James Brown, John Rhein, Wm. F. Koburn, James Kearns, Ed. Rouse, Geo. Eesaman, Enoch Toy, W. J. Ruffley, R. Brightman, James Morton, S. W. Garvis, Reed Hadley, Herbert Horne, James Anderson, John Adams, Harry Grunable, W. A. Parall, N. McGinness, James H. Grunable, John Black, Mesta Machine Co.
F. H. Zimmers, Union Foundry & Machine Co.
A. W. Slocum, Keystone Car Wheel Co.

Steel Corporation Guarantees Employees' Stock.

The following circular has been issued by the finance committee of the United States Steel Corporation:

To the Officers and Employes of the United States Steel Corporation and of its Subsidiary Companies Who Subscribed for the Preferred Stock of the Corporation Pursuant to the Circular Letter of Dec. 31, 1902: The finance committee sees no reason to change its opinion as to the intrinsic value of the preferred stock subscribed for pursuant to the said circular, but, of course, it recognizes that the decline in the market of selling prices naturally may occasion anxiety in the minds of the subscribers under the circular. Accordingly, it deems it proper now to dispel apprehension of loss by the following additional offer or guarantee: The corporation will, at any time during January or February, 1908, pay to every subscribing officer and employe who shall have retained this stock for the full period of five years and otherwise complied with the terms of the circular $82.50 per share for the stock, less the rebates and benefits he shall have been entitled to under the circular (not including benefits received on account of differences between interest and dividend which he will in any event retain), provided he wishes to sell the stock for that price at that time.

The warehouse of L. Clinkofstone, Saginaw, Mich., recently destroyed by fire, will be rebuilt. Work of rebuilding has already commenced.

The plant of the American Sheet Steel Co., at Muncie, Ind., resumed operations Oct. 5. It had been closed for several months, during which time extensive repairs have been made.

The Manufacturers Foundry Co., Waterbury, Conn., whose capital was recently increased to $50,000, will have its new plant ready for occupancy about Nov. 15. Entire equipment has been purchased.

The Williams Patent Crusher & Pulverizer Co., St. Louis, Mo., advises us that the fire in its plant recently mentioned in these columns was caused by pieces of steel having been placed in a wooden box containing slacked lime for the purpose of drawing the temper. The company strongly advises manufacturers to use iron boxes for such purposes. By working day and night the machine shop was put in condition so that it was in partial operation within two days after the fire. The company is now running full force, but the reconstruction is not completed.

The Brown Corliss Engine Co., Corliss, Wis., has received an order from the Lorain Steel Co., Lorain, O., for a 30x60x60-inch cross-compound Corliss engine.

James Bonar & Co., Inc., Pittsburg, has taken over the business heretofore known as James Bonar & Co., and will continue to manufacture and handle its well known line of steam appliances, adding a number of appliances from time to time necessary to make the line complete. The company is now erecting a machine shop and brass foundry at its property at 40th Street, for the purpose of manufacturing its own specialties and other machine work. The equipment will be new and of modern design, and will be adapted to the manufacture of special work. In addition to this, the shop will be equipped with a modern steam plant, in which is included a special high pressure boiler for testing purposes.

The South Sharon plant of the American Tin Plate Co., South Sharon, Pa., resumed operations in full this week. This plant contains twenty mills.

LATHE WITH FRICTION ALL-GEARED HEAD.

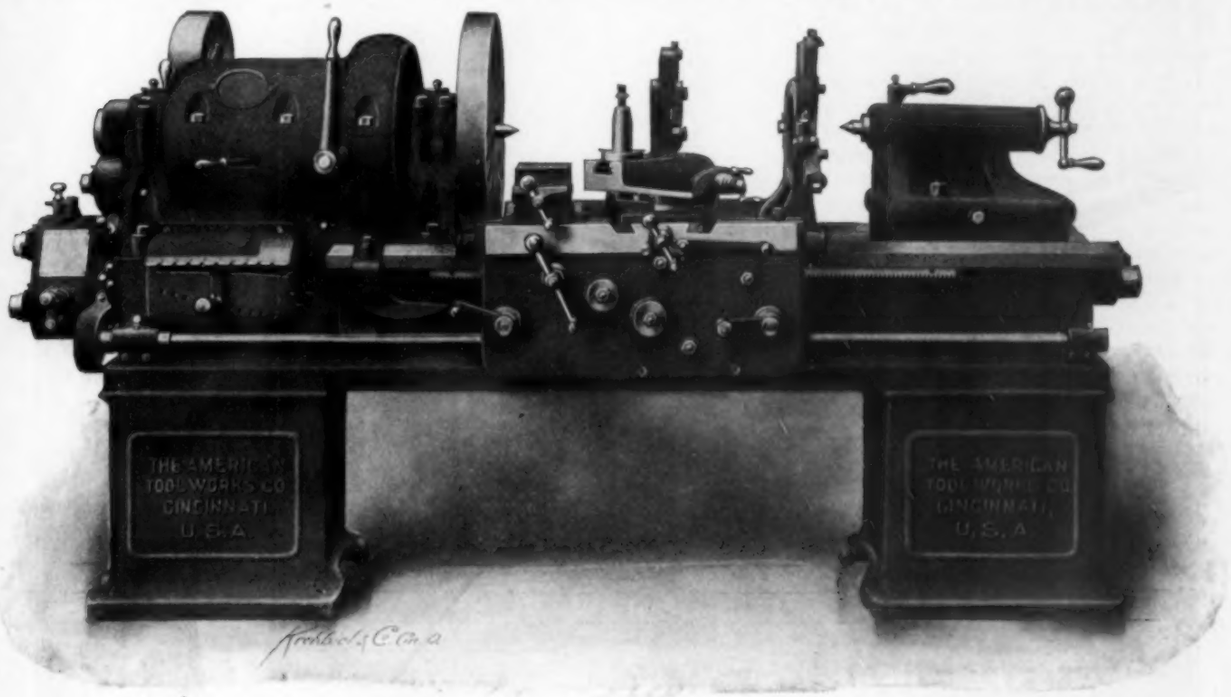
In view of the marked tendency in modern shop practice toward all-gear drives for machine tools, the accompanying illustration is of interest. It shows a lathe with a new friction all-geared head for direct connection to an electric motor, built by the American Tool Works Co., Cincinnati. The headstock is a complete unit to which any type of motor, constant or variable speed, single or multiple voltage, may be connected, the motor being set on top or at the rear of the gear casing. The mechanical speed changing device requires only six gears for the changes of spindle speeds.

The design employs few parts, and all gears are neatly and completely enclosed. They are arranged to run at low pitch line velocities, reducing greatly the noise incidental to gear drives. The device necessitates no slip gears, no pull pins, no hollow shafts and no tubular gears. This construction, in connection with a variable speed motor, provides sixty spindle speeds on the 20-inch lathe, ranging from 5 to 322 r. p. m. in geometrical progression, all obtained while the machine is in operation. The motor controller lever is located on right-hand side of the carriage at the hand of the operator.

The speed changing mechanism is also adapted to belt drive from countershaft, as in the illustration, and a machine thus installed as a belt-driven lathe may be readily converted into a motor-driven lathe at any time.

In addition to an all-speed variator, this lathe is equipped with a rapid change gear mechanism providing a wide range of changes for feeding and screw cutting. Each change is available while the machine is in full operation, without removal of any gear.

The bed is of a patent drop-V pattern which introduces an unusual amount of metal into the bridge of the carriage. The leadscrew is placed on the inside of the bed, bringing the pull directly under the cutting tool and thus centralizing the strain, obviating the tendency to twist where the pull is through the apron. Half nuts are operated by a lever at the front of the carriage.



AMERICAN TOOL WORKS CO.'S NEW LATHE.

The Winding Shoals Electric Power Co., recently incorporated at Buford, Ga., will install a 6,000-h. p. hydro-electric plant on the Chattahoochee river, four miles west of Buford, Ga. The location selected for the dam and power house is between high bluffs which are composed almost entirely of solid granite. The plans contemplate the construction of a crib dam. The power house will be of stone and concrete construction. The first equipment of wheels and generators will be for about 3,000 h. p., ultimately increased to 6,000. A portion of the power will be utilized by local factories in Buford, which is the largest leather manufacturing district in the South, and for the Atlanta, Buford & Gainesville Ry., for which a survey is being made. The balance will be transmitted to Atlanta and surrounding towns. The Electrical Equipment Co., 939-40 Monadnock Bldg., Chicago, of which J. W. Peterson is president, is preparing the plans and specifications and will soon be ready to receive bids for the machinery equipment and construction work. Mr. Peterson is one of the officers of the company and has personally had charge of the engineering details in connection with the work. He has associated with him in the company several prominent men of Atlanta, Gainesville and Chicago.

The Republic Engineering Co., of Pittsburg, Pa., has been organized as a successor to the Diescher Coupling Co., and will shortly be incorporated with a capital of $100,000. The company will manufacture complete transmission equipment, Diescher pipe couplings, tin mill machinery, structural works machinery, elevating and conveying machinery, coal washers, cork cutting machinery and all machinery of special designs. The offices of the company are at 514 Hamilton Building, and the works are located at 41st and A. V. R. R..

The plant of the Crescent Mfg. Co. at Muskegon, Mich., which was partially destroyed by fire Sept. 15, will not be rebuilt at that place, as the timber in this locality is not sufficient to meet the demand, but the company expects to locate a large plant elsewhere as soon as a suitable place can be obtained. The power plant was uninjured. The company manufactures nail kegs in large quantities.

W. M. Dillon, of the Northwestern Barb Wire Co., of Rock Falls, Ill., has asked for the appointment of a receiver for the Dillon-Griswold Wire Co., of Sterling, Ill. Mismanagement is charged.

Alfred D. Plamondon has been appointed receiver for the Kentucky Iron Co. The liabilities of the concern are said to be $20,000 and the assets $15,000.

New Furnaces, Steel Plant and Finishing Mills of the La Belle Iron Works, Steubenville, O.

During the past three years the La Belle Iron Works have made such extensive additions to their Steubenville, O., plant, that today they are one of the most important of the "independent" iron and steel concerns in the country. Having their own ore properties in the Lake Superior region, coal and coke properties at Steubenville, in West Virginia and in the Connellsville region, their blast furnaces, steel works and finishing mills are in position to compete profitably with any of the larger steel consolidations in the country. The Steubenville plant was designed and built under the supervision of S. V. Huber, mechanical engineer, of Pittsburg, and every department indicates that no expense was spared to secure equipment calculated to give quality of output and economical operation.

a large plant at Wheeling, W. Va. The output of the two works consists of basic pig iron, basic open-hearth steel billets, blooms, slabs and sheet bars; plates from 6½ inches to 26 inches wide; steel skelp from 3⅜ to 26 inches wide; steel pipe from ⅛ inch to 12 inches in diameter; steel cut nails, shovel and tack plate and special steel for stamping purposes. The company is capitalized conservatively at $7,000,000, is organized under the laws of West Virginia and has the following officers: John E. Wright, president; A. J. Clark and E. W. Mudge, vice presidents; W. E. Beswick, secretary; D. J. Sinclair, treasurer, and W. B. Higgins, assistant treasurer.

The LaBelle Iron Works is one of the oldest of the many plants in the Wheeling district, the Wheeling plant having been built in 1852 and increased in capacity from

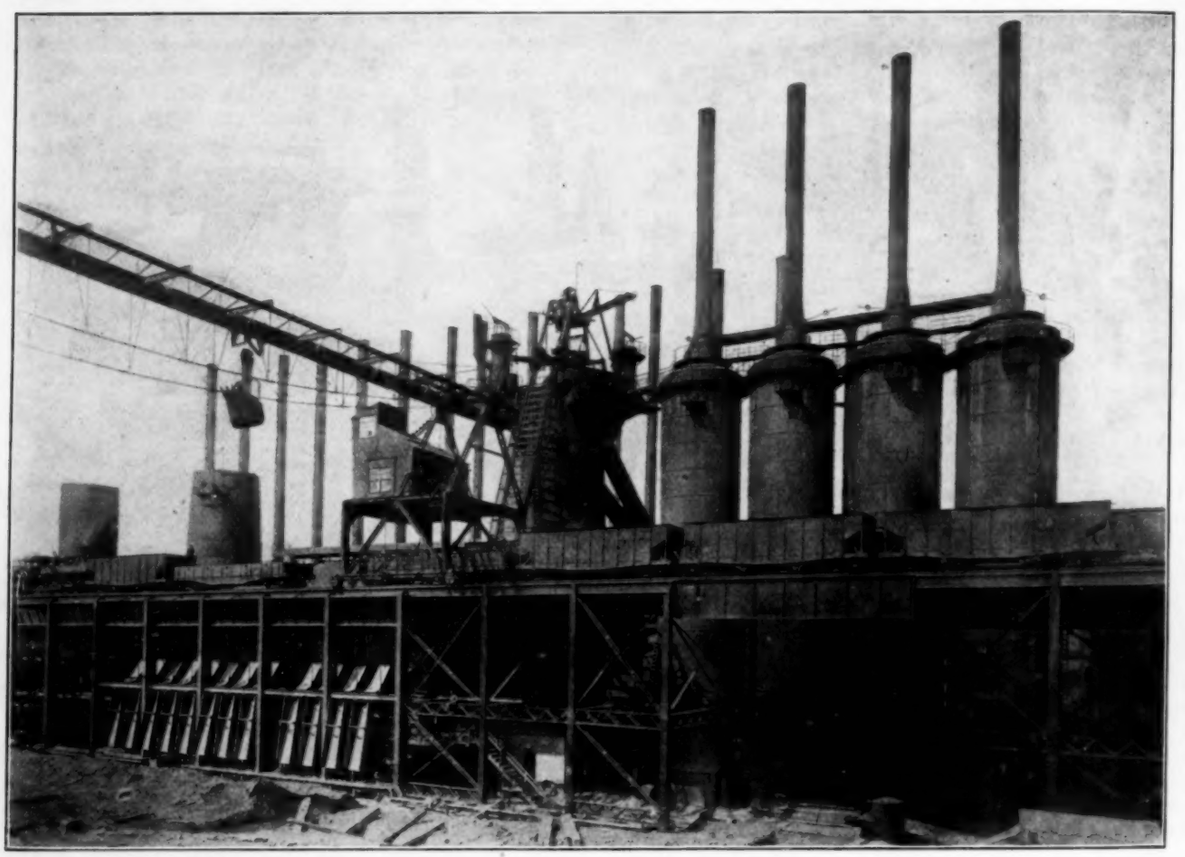


FIG. 1.—COMPLETED FURNACE AND FURNACE UNDER CONSTRUCTION.

Sufficient ore property is owned and controlled to provide an ample supply for many years to come, while the properties in the Connellsville region of Pennsylvania and in West Virginia insure an ample supply of blast furnace fuel for future requirements. At Steubenville the company owns extensive coal mines, some of them underneath the works, which provide fuel for the gas producers and boilers at a minimum cost. The old blast furnace was torn down to make room for a more modern one which is now in operation, and a second is being built. When this is completed sufficient iron will be produced to supply the nine 50-ton open-hearth furnaces. The annual output of the latter will be about 300,000 tons. The facilities for the receipt and shipment of material could not be improved upon, as side tracks from three lines, the P., C., C. & St. Louis R. R., C. & P. R. R. and the Wheeling & Lake Erie R. R., enter the works and insure favorable rates at all times.

In addition to that at Steubenville, the company operates

time to time, while the Steubenville plant was originally built in 1855.

Blast Furnaces.

When fully completed, the blast furnace plant will consist of two stacks, each 20x90 feet. Stack No. 1 was placed in operation nearly a year ago, and work on the second stack is well under way. Each has four Massicks & Crooke stoves, the furnaces proper and the stoves being built by George W. McClure, Son & Co., Pittsburg. The cast house, which is 65x140 feet, is located between the two furnaces. The slag is run from the two stacks to a Heyl & Patterson slag-casting machine, which granulates it and deposits it in large storage bins from which it is loaded directly into railroad cars by means of a chute. The slag runners are also so arranged that in case of a break-down of the slag-casting machine, the liquid slag can be run into hot-slag cars. On the south side of the cast house is located the hot metal track. The ladle cars are here filled with the metal from the furnaces, and con-

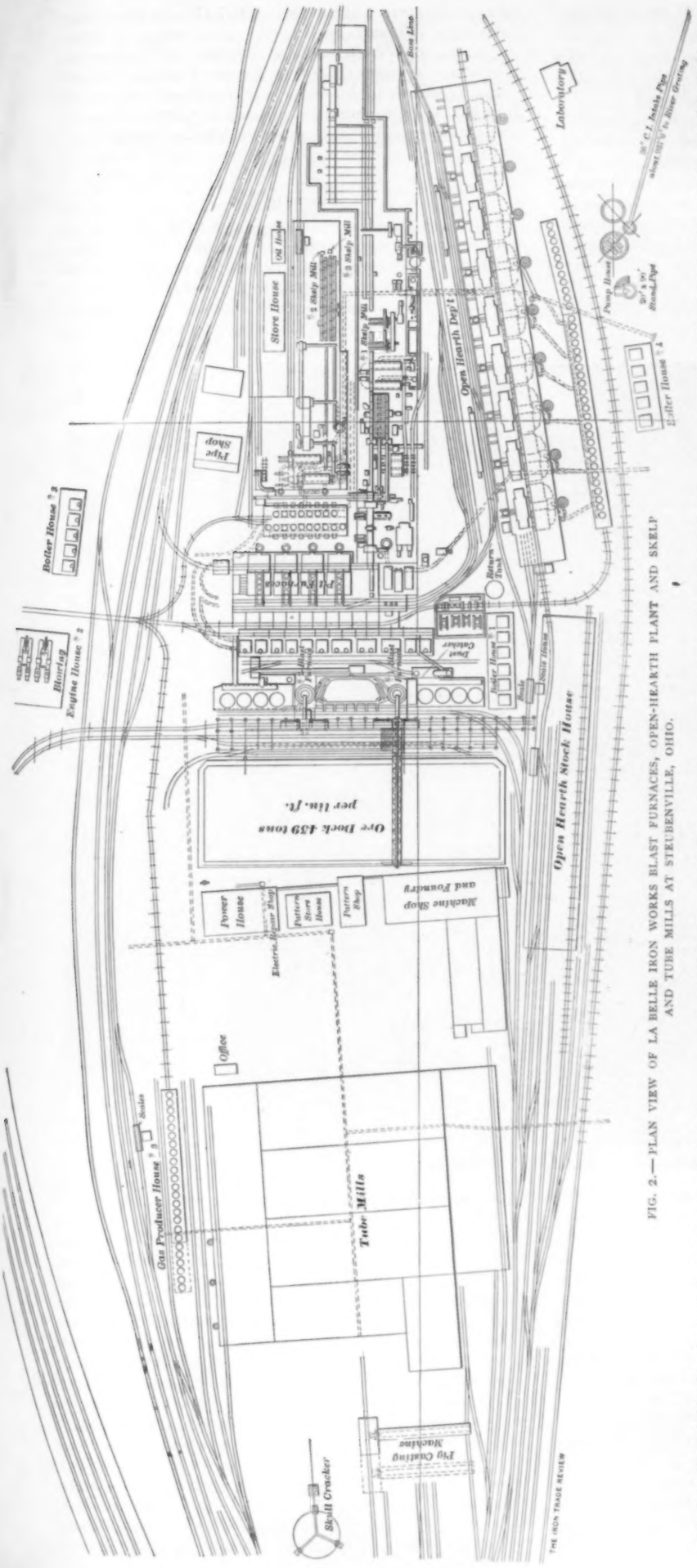


FIG. 2.—PLAN VIEW OF LA BELLE IRON WORKS BLAST FURNACES, OPEN-HEARTH PLANT AND SKELP AND TUBE MILLS AT STEUBENVILLE, OHIO.

veyed either to the open-hearth plant where the direct metal process is in use, or the pig casting machines. The ladle cars are of 25 tons capacity each. The furnaces are provided with gas washers of the Steese type, which not only wash the gas, but also act as a safety device in case of an explosion. Each gas washer consists of a trough 46 feet long, 19 feet wide and 9 feet deep. This is filled with water, and the gas coming from the furnaces impinges upon the water and passes out through a return elbow, coming in contact with the water two additional times in a similar manner, and passes out washed into the gas main from which it is distributed to the stoves and gas-fired boilers. The furnace tops are provided with Brown rotary distributers and the skip hoists are of the single-bucket type, built by the Brown Hoisting Machinery Co.

Ore Dock and Bins.

In order to secure the benefit of shipping ore by the different railroads, the track for bringing ore to the ore dock is located between the C. & P. R. R. and the P., C., C. & St. Louis R. R. At an elevation of 40 feet above the C. & P. railroad, the ore tracks connect with the ore bin tracks. There are 240 feet of parabolic ore bins provided for the two furnaces. Four suspended larries, electrically driven and provided with scales for weighing the different grades of ore and limestone, operate underneath the ore bins and deliver the ore and limestone to theskip hoists. The coke bins are provided with chutes to deliver the coke into the skip. The coke, or and limestone are delivered into the bins from drop-bottom cars on the elevated track. The ore bins and larries were built by the Brown Hoisting Machinery Co., while the McClintick-Marshall Construction Co. built the overhead bridge and trestle work in connection with the ore and coke bins. An ore bridge built by the Brown Hoisting Machinery Co. commands the entire ore dock, which is 450 feet long and 150 feet wide. A second ore bridge will very likely be added.

Blowing Engines.

The blowing engines for furnace No. 1 are located in an engine house between boiler houses Nos. 1 and 2. The blast is furnished by two Weimer blowing engines, each 42x84x60, and two Mackintosh, Hemphill & Co. engines, each 38x80x48. Immediately back of the engine house, and connected with it is located the pump house, which contains four open heaters, four duplex compound boiler feed pumps and two low-service water pumps. A new blowing engine house is now being built on the west side of the C. & P. R. R. This will contain three pairs of horizontal cross-compound blowing engines, having 44x66-inch high-pressure air cylinders, 84x66-inch low-pressure cylinders and 84x66-inch air cylinders. These engines are being built by the Mesta Machine Co. An elevated condenser will be installed and will receive the exhaust steam from these engines. The intention is to blow the two furnaces with these three pairs of engines. The present high-pressure blowing engines will be used as re-

serves in case of a break-down to any of the horizontal cross-compound engines.

Open-Hearth Department.

A stock house 80x500 feet is located at the south end of the open-hearth plant. The floor of the stock house is commanded by three electric cranes, two of 5 tons capacity each and the third of 10 tons capacity. The material to be charged into the open-hearth furnaces is loaded into charging boxes which are placed on charging cars. These cars are then carried by means of an inclined conveyor to the charging floor of the open-hearth plant. This consists of nine 50-ton open-hearth furnaces and 36 gas producers. The gas producers and furnaces were built by Alex. Laughlin & Co., of Pittsburg. The open-hearth building is 700 feet long and 125 feet wide. The charging floor is commanded by two Wellman-Seaver charging machines, and a 40-ton electric traveling crane for charging hot metal into the open-hearth furnaces. The casting floor is commanded by two 75-ton ladle cranes. Two pouring platforms are provided. The gas producers are of the Laughlin water seal type. Coal bins located above the gas producers carry the necessary coal supply. Chutes lead from these bins to the charging hopper of each gas producer. Above the coal bins is located the narrow-gauge track for the coal cars and the electric locomotive that brings the coal supply direct from the storage bins at the mine shaft house to the producer houses.

Pit Furnaces.

After the ingots have been cast, the ingot cars with the ingots and molds are taken to the pit furnace building, which is 351 feet long and 90 feet wide. At the end of this building are located two electrically operated ingot extractors. These as well as the ingot cranes were furnished by the Wellman-Seaver-Morgan Co. After the ingots are stripped, they are conveyed to the pit furnaces by means of the ingot cranes. There are four pit furnaces, each having four pit holes. The two electric cranes mentioned above are provided for charging and drawing. An electrically driven ingot buggy brings the ingots from the pit furnaces to the blooming mill.

Blooming Mill.

This is a 46-inch mill and is driven by a pair of 40x60 horizontal geared reversing engines, built by the Mesta Machine Co. Special manipulators are provided for the blooming mill tables, so that narrow and wide slabs can be edged. This mill is especially designed for rolling thin and wide slabs. In line with the blooming mill is located a hydraulic shear which is used for shearing the slabs into sections when finishing direct on the skelp mill, located in a direct line beyond the blooming mill. When rolling thin gauges of material on the skelp mill, the slabs coming from the blooming mill are transferred beyond the hydraulic shear to a second shear, where they are sheared into sections. These are then stored hot in three heat retaining furnaces. The operator who feeds the slabs to the finishing skelp mill, draws from these heat-retaining furnaces a slab which is conveyed on a roller table in front of the wash heat furnaces located near the skelp mill. The slab is then pushed into the wash heat furnace by means of a hydraulic pusher. Every time the operator draws a slab from the heat retaining furnace, he pushes one out of the wash heat furnace. Thus the arrangement of shears and furnaces permits of roll-

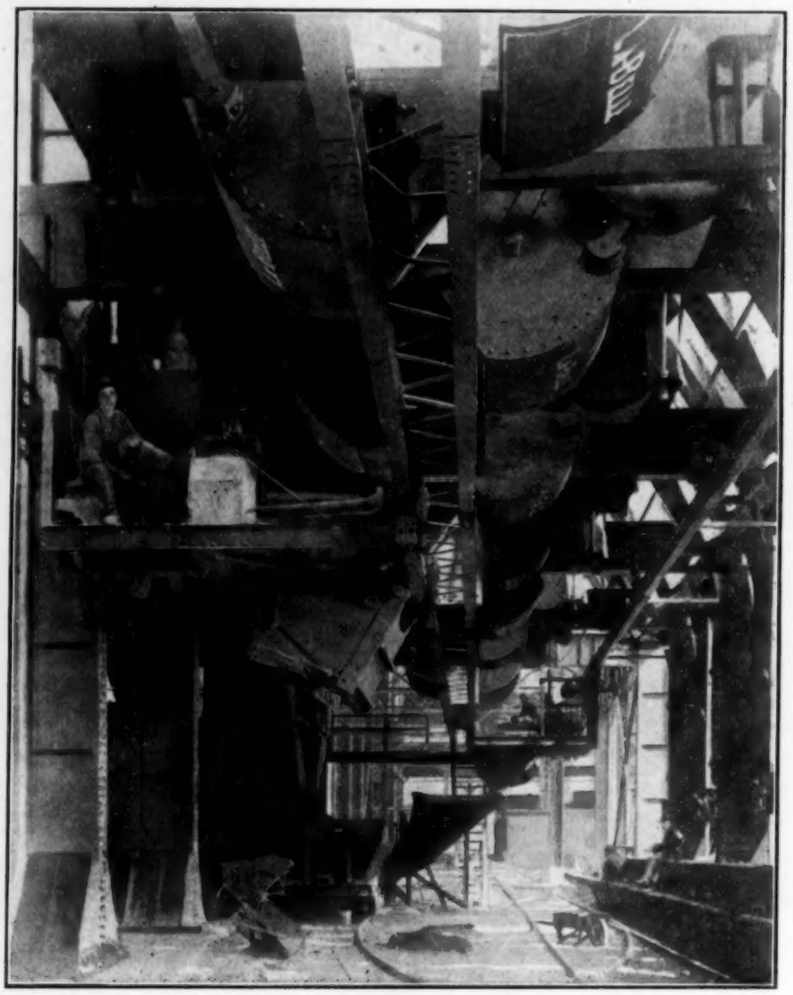


FIG. 3.—ELECTRIC LARRIES AND ORE AND LIMESTONE POCKETS.

direct or of rolling wash heated slabs. Between the two hydraulic shears is located a roller table at the extreme end of which is a steam shear. This is used for shearing material that is to be shipped or material that is to be sent from the blooming mill cut to length to the heating furnaces for the other two skelp mills located in a separate building alongside of the blooming mill building.

Skelp Mill.

The skelp mill located in line with the blooming mill is of the universal continuous type. The roughing mill is driven by a 40x60 engine. The mill consists of horizontal and vertical rolls, and a conveyor table brings the material coming from this mill to a three-high finishing mill. The latter is a 24-inch mill and is driven by a 40 and 80x60 tandem compound engine. The finished material from this mill is then delivered on a hot bed. The engines driving the skelp mill were built by the Buckeye Engine Co. The roughing mill was built by the Lloyd Booth plant of the United Engineering & Foundry Co. The finishing mill was built by the West Penn Foundry & Machine Co. From the hot bed the material is placed on a shear table, where it passes through a large guillotine shear and is cut to length. The sheared material is piled by a mechanical piling apparatus. The piles are then loaded into cars by an electric crane, to be delivered to the pipe mill or delivered elsewhere. The two mills for rolling the smaller sizes of skelp up to 15 inches in width, are located in a separate building running parallel to the blooming mill. Continuous heating furnaces built by Alex. Laughlin & Co. furnish the hot slabs to the three-high roughing mill. Tables convey the roughed material to the two-high finishing mills arranged in tandem and driven by the same engine operating the roughing mill. This engine is a 36x60 Corliss type. The finished material from the mills is sheared by two guillotine shears and it is afterwards mechanically piled and taken to the tube plant or shipped elsewhere. All mill tables are electrically driven. The hydraulic power is furnished by three pairs of horizontal cross-compound condensing fly-wheel pumps. These have 17-inch high-pressure cylinders, double-acting outside end packed pump plungers, 5½ inches in diameter with 36-inch stroke. The speed of these pumps is controlled by an accumulator. The pumps were furnished by the Snow Steam Pump Co., of Buffalo, N. Y. Two pairs of duplex compound pumps, furnished by the Epping-Carpenter Co., are located in the lower end of this building and furnish hydraulic pressure to the skelp mills.

Boilers.

The boiler houses are equipped with Stirling boilers. Of the 13,000 h. p. not installed, 7,000 h. p. are gas fired and the remaining 6,000 h. p. are coal fired. The coal fired boilers are provided with the Green chain grate. The ashes from the boilers and the gas producers located near the pit furnace building and the refuse from the soaking pit furnaces are conveyed in an electrically driven ash car to an ash hoist at the extreme end of the pit furnace building. This is provided with a large storage bin. The refuse from the boiler house, pit furnaces and gas producer is elevated into this bin, from which it is loaded into railroad cars by means of a chute.

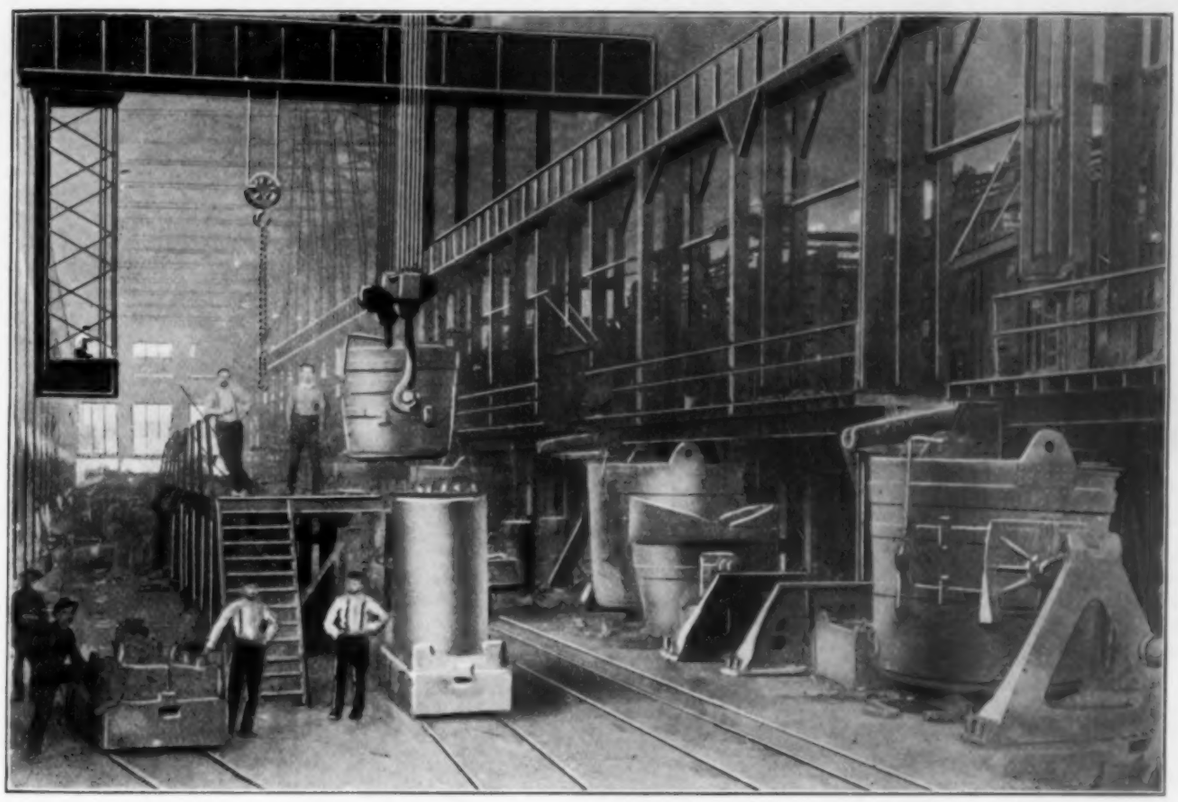


FIG. 4.—POURING SIDE OF OPEN-HEARTH FURNACES.

Miscellaneous Buildings.

The pattern shop, machine shop and foundry, blacksmith shop, pattern storage house and the electric power house are located near the ore dock. The electric power house is equipped with generators for furnishing both direct and alternating current. The alternating current is used for driving the pipe mill machinery, while the direct current is employed to operate the electrical machinery in other parts of the plant.

Pipe Mill.

The pipe mill is located on the southern end of the property, and the equipment consists of two butt weld and two lap weld mills, which produce pipe from ⅛ to 12 inches in diameter. The socket department is equipped with the most modern machinery for the manufacture of sockets, and nearly all the smaller machines are driven by individual motors. The skelp from the skelp mills

is unloaded from cars by means of electric traveling cranes ready to be charged into the furnaces. Electric traveling cranes also distribute the welded pipe from the furnaces to th threading machines, test benches and into the warehouse. A pipe galvanizing department of modern equipment adjoins the pipe mill. A line of gas producers is located immediately back of the furnaces. These are provided with coal bins, similar to those described in connection with the open-hearth plant. Most of the pipe mill machinery was furnished by the United Engineering & Foundry Co.

Coal Mines.

The company owns extensive coal mines in Steubenville and vicinity and others on the opposite side of the Ohio river. These mines are connected to the shaft located near the blowing engine house now under construction. Large coal storage bins are being erected near this shaft. From these bins the coal needed in the different gas producer houses and coal fired boilers will be delivered over the elevated narrow-gauge tracks which connect with all the gas producers and boiler houses.

Wheeling Works.

The plant at Wheeling, W. Va., originally built in 1852, has been greatly enlarged from time to time. It contains four regenerative gas heating furnaces, one 3-high 22-inch nail plate and one 2-high 21-inch nail plate or skelp mill and 175 cut nail machines. The annual capacity of this plant is 600,000 kegs of cut nails and 40,000 tons of skelp, tack plate and stamping stock.

The New Haven Mfg. Co., New Haven, Conn., manufacturer of iron-working machine tools, has been making alterations and additions, including the installation of a number of improved machines of its own and others' manufacture. By the addition of new boilers the steam capacity has been increased about 50 percent.

The Racine Steel & Iron Mfg. Co., Racine, Wis., has had a year of marked growth in its business, with promise of greater prosperity in the year to come. The company's facilities have been greatly improved and it is now beginning the manufacture of a general line of heavy hardware. Orders already booked insure steady employment through the winter.

A voting majority of holders of shares of stock in the Dover Forge & Iron Co., Canal Dover, O., have decided to annul their West Virginia charter as soon as such action can be legally taken and reorganize under the laws of Ohio, where all their property is situated. This company announces that its products will be placed upon the market early in January, 1904.

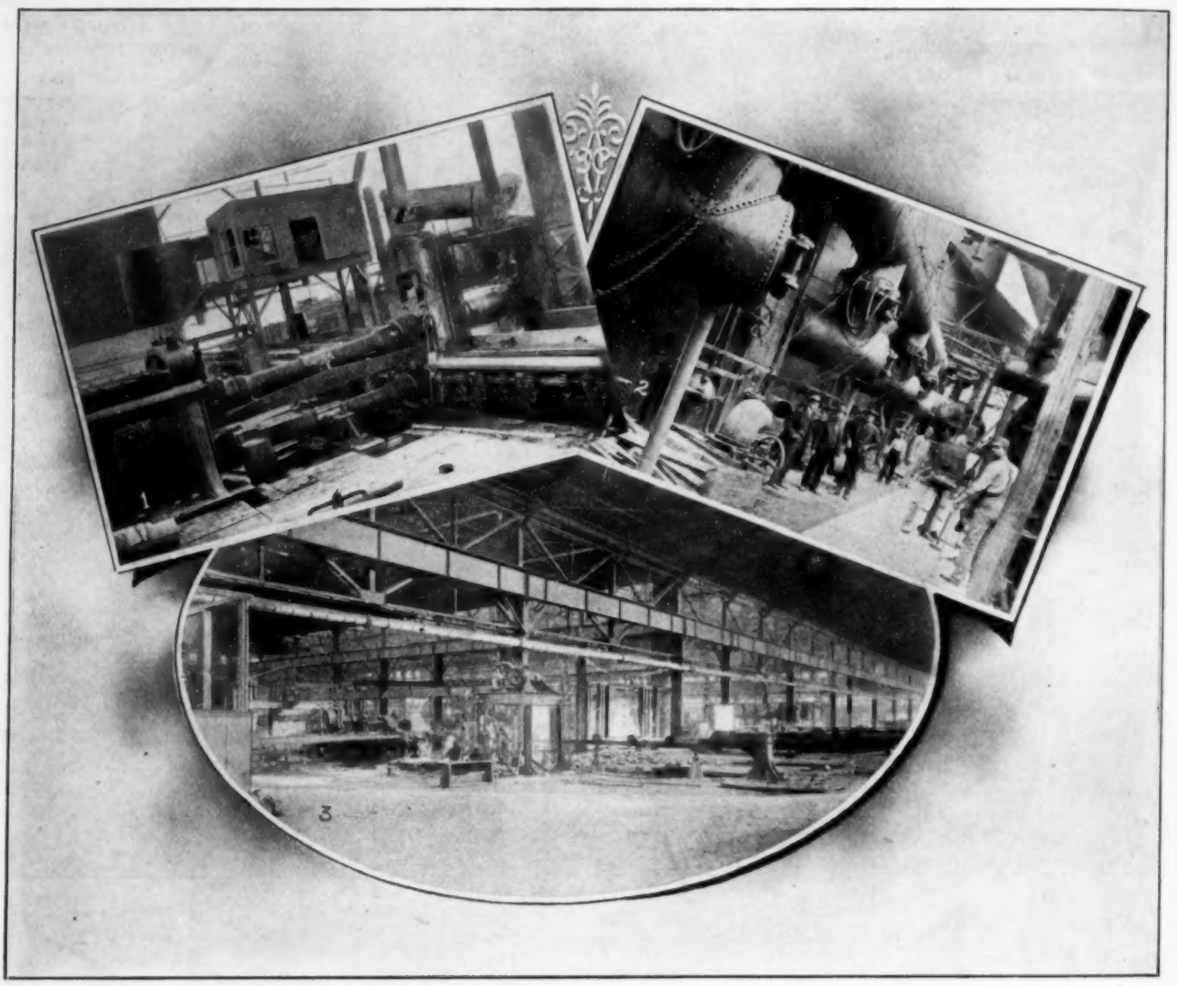


FIG. 5.—1. BLOOMING MILL. 2. HOT BLAST STOVE, MAIN AND VALVES.
3. PIPE MILL HEATING FURNACES.

E. M. Comstock has been elected president and treasurer, S. W. McKillup manager and Isabelle Blair secretary of the Comstock Sash, Lock & Novelty Co., a new concern at Ypsilanti, Mich., capitalized at $200,000.

The Lacey-Buck Iron Co., whose plant is at Trussville, Ala., has filed an application to increase its capital stock from $500,000 to $600,000 to cover the cost of improvements recently made to its furnace.

Grant & Williams, a firm in the iron business, 21 Park Row, N. Y., have filed a schedule in bankruptcy showing that the liabilities are $110,483; the assets, $86,136.

PRODUCTION OF COAL IN 1902.

The United States Geological Survey has issued a preliminary statement showing the coal production in the United States in 1902, as prepared by Edward W. Parker, statistician. For the first time in the history of the United States the production of coal has reached a total of over 300,000,000 short tons, showing an actual output of 300,930,659 tons of 2,000 pounds, valued at $373,133,811. Of this total, the output of anthracite coal amounted to 36,865,710 long tons (equivalent to 41,289,595 short tons), which, as compared with the production of 60,242,560 long tons in 1901, shows a decrease of 23,376,850 long tons, or almost 40 percent. This decrease was due entirely to the suspension of operations by the strike in the anthracite region from May 10 to Oct. 23, a little over five months. Had it not been for the strike, the output of anthracite for the year would probably have been 65,000,000 long tons. The value at the mines of the product in 1902 amounted to $81,016,937, as against $112,504,020 in 1901, a loss of about 27 percent. The average value of the marketed coal sold during the year at the mines was $2.50 per long ton, the value in 1901 having been $2.05. The high priced anthracite mined during the strike was not enough to increase the average price greatly.

An interesting feature of the production of anthracite coal is the increase in the recovery of usable fuel from the old and unsightly culm banks that exist throughout the region. Up to 1890 no attempt had been made to recover and utilize this fuel. In that year, however, the washery industry was started, and during the year 41,600 long tons of coal were recovered and marketed. That industry has been steadily increased until, in 1901, the washery product amounted to 2,567,335 long tons. Many of the washeries as well as the mines were closed down during the strike, and the production of washery coal fell off to 1,959,466 long tons, which, however, was not in the same proportion as the decrease in the mined product.

A large part of the shortage caused by the strike in the anthracite region was made up by the use of bituminous coal and of coke. The shortage was, however, not entirely made up, as many factories, unable to procure any fuel whatever, or, if at all, at prohibitory prices, were obliged to close down entirely and were unable to resume until prices for fuel again approached normal conditions. The output of bituminous coal (which includes semi-anthracite and all semi-bituminous and lignite coals) amounted in 1902 to 259,641,064 short tons, valued at $292,116,906, as against 225,826,849 short tons, valued at $236,406,449 in 1901. The increase in the production of bituminous coal was, therefore, 33,814,215 tons in quantity, and $55,710,457 in value.

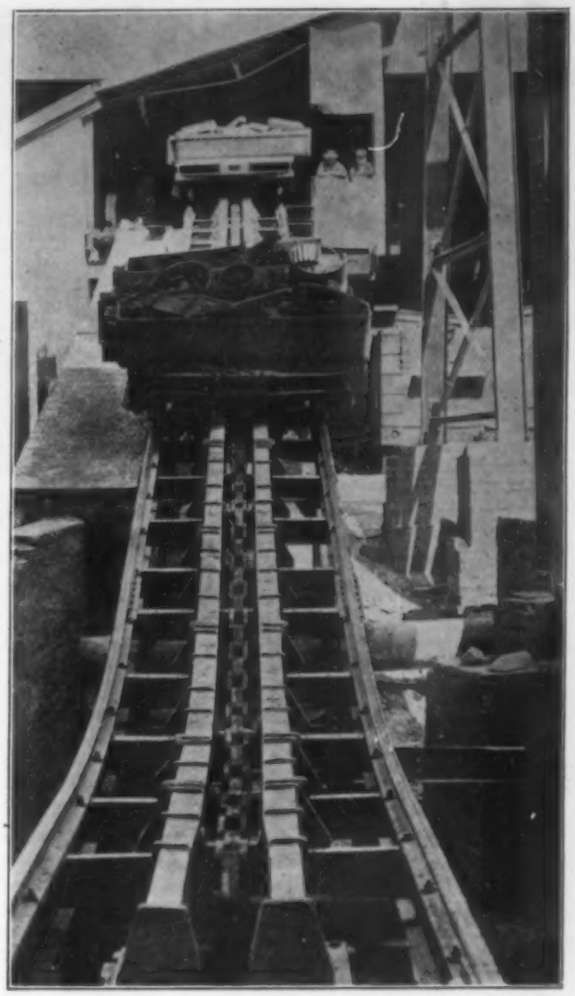


FIG. 6.—INCLINE FOR CHARGING BOX CONVEYOR, LEADING TO CHARGING FLOOR OF OPEN-HEARTH BUILDING.

The production of bituminous coal in Pennsylvania in 1902 exceeded that of 1901 by 15,755,874 short tons, but was not sufficient to overcome the great loss in anthracite production. The states in which the more important increases occurred were Illinois, which gained 5,547,751 short tons, or a little

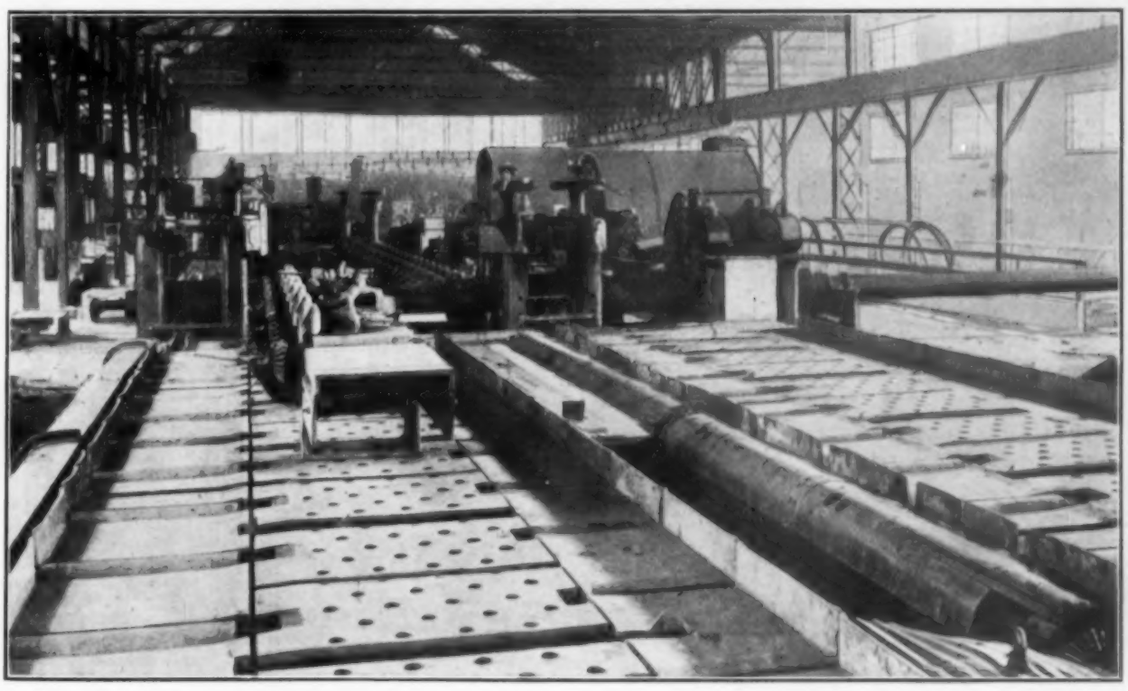


FIG. 7.—SMALL SKELP MILL.

FIG. 8.—HYDRAULIC SHEARS.

more than 20 percent over 1901; Colorado, whose increase was 2,314,412 short tons, or over 40 percent; Ohio, with a gain of 2,444,577 short tons, not quite 12 percent; Indiana, with an increase of 2,268,371 short tons, or nearly 33 percent; Alabama, with a gain of 1,490,865 short tons, or 16 percent; and Kentucky, whose output increased 1,193,176 short tons, or a little over 20 percent.

Oct. 28, 29 and 30 are the dates fixed for the convention of the National Federation of Employers' Associations, in Chicago. The object is to combat the teachings of industrial democracy. A national organ will be published and a campaign of education carried on.

Martin Pattison, of Superior, Wis., a well known iron mining man, has returned from Wyoming, where he has begun the exploring of an iron property 30 miles north of Rawlins. The formation comes close to the surface, and occupies the ground at an angle of about 20 degrees. Some of the ore has assayed as high as 68.72 metallic iron, is low in phosphorus, and contains no sulphur. There are 500 acres in the tract owned by Mr. Pattison, and he says that present indications are that there is a large deposit.

Vice Chancellor Gray denied the petition of F. Schoenfield, a stockholder, who applied for an order to restrain the American Can Co. from paying a proposed 2½ percent dividend on the preferred stock, alleging the company had not earned the dividend. President Assmann, in answering the affidavit of the petitioner, said that the profits of the company for five months, ending in August, were $1,732,202, and that the profits for the year ended March 31, were $2,660,000.

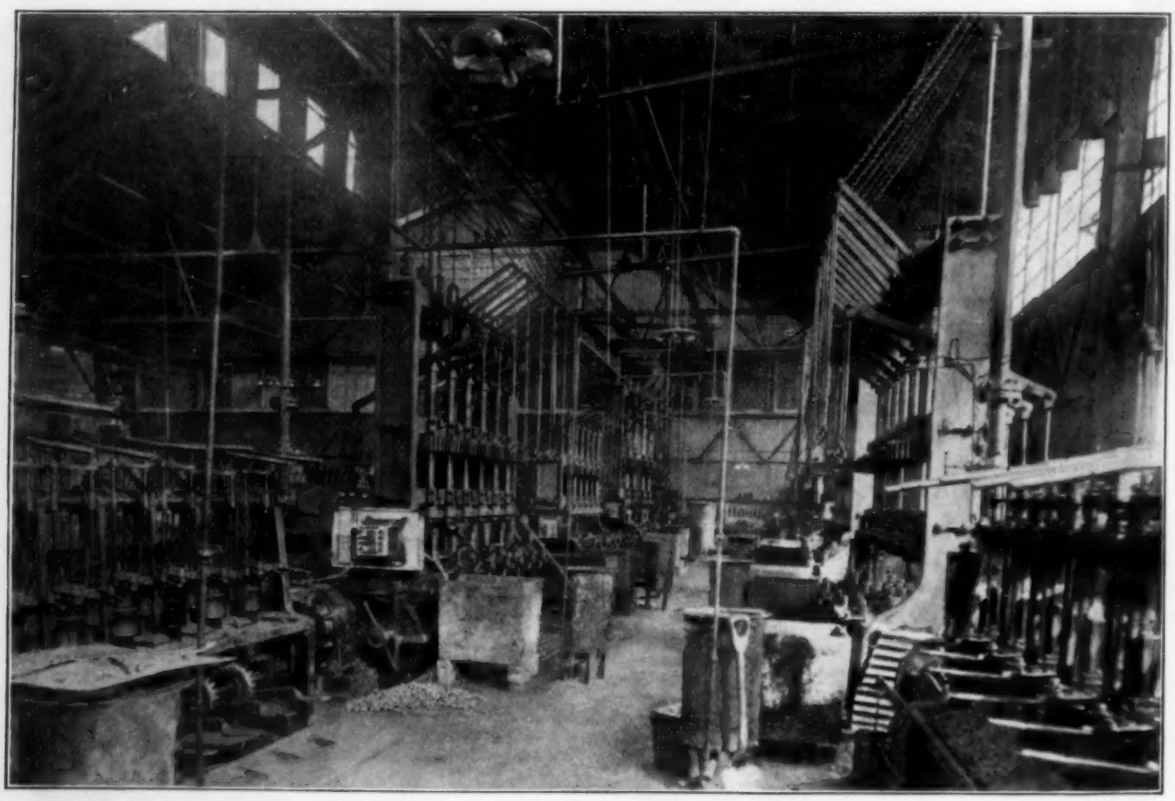


FIG. 9.—SOCKET DEPARTMENT IN PIPE MILL.

Speeds and Feeds.*

BY FREDERICK HOLZ.

In most of our modern manufacturing establishments we hear so much of speeds and feeds and our minds are so filled with this important subject that it naturally forms the chief topic of discussion wherever and whenever machine tool men meet. This effort for increased speeds has been going on for some time, notwithstanding the

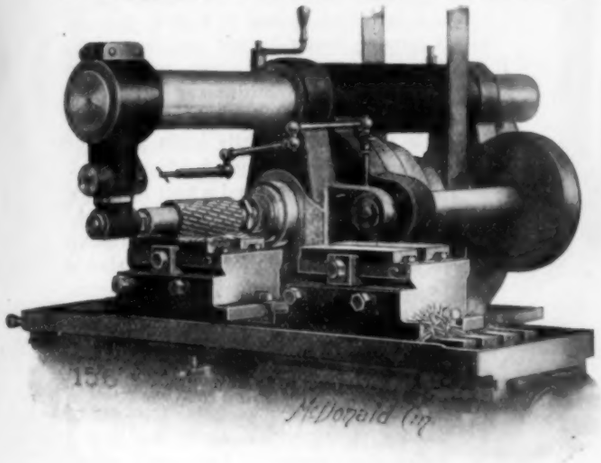


FIG. 1.—SLABBING TOOL STEEL.

fact that in all the history of machining there were never such vast improvements made as within the last two or three years.

We may listen with wonder today, to one of our friends who is running a surface speed of 100 feet per minute, and feel that this is the limit, only to learn tomorrow that our neighbor applies a speed of 150 feet per minute, and thus the increase in speed goes on. Today the speed barometer stands at 250 feet in one of our Cincinnati shops.

It is also true that, while we read a great deal of fast feeds and speeds, we see very little of them when going through the country visiting shops. It also is true that these things are in a very experimental stage, but for the progress thus far made we owe thanks, first of all, to the high speed tool maker, and second, to the designers of modern machine tools who take care of these new conditions. Most of our present machine tools are not satisfactory for using high speed tool steel. Whenever we undertake to use the new steel, we meet with all sorts of break-downs and other difficulties.

About a year ago, Mr. Lodge and myself took a trip to Pittsburg, right in the heart of heavy manufacturing and rapid production. We have often noticed on forged spindles and similar work evidence of very coarse feeds used on the rough turned part as they come from the forge shop, and we proposed to look into the methods by which these are made. We went to see one of the Carnegie shops near Homestead, and there saw an axle lathe taking a heavy cut ¼ inch deep on a 5-inch diameter axle as it came from the forge. The carriage on this lathe traveled 3⅜ inches a minute. This was done with a single tool, Crescent self-hardening. Upon our return, we tried to imitate that cut in our shop. I saw it done and, of course, we wanted to do it too, but our lathe did not have anywhere near the power. Of course, I did not expect that we could do it on 5-inch diameter work, nevertheless we have had fair success on smaller work, and with this encouragement we began to look for more power, heavier cuts, and faster feeds.

Last November we took a trip through some of the large shops in the Great Lakes district, and in Milwaukee we were told of a speed which broke all records we had ever heard of. Mr. Schoeltke, superintendent of the Nordberg Mfg. Co., told us that he turned a 5¼-inch diameter shaft (reducing it to 5 inches) 22 inches long in one minute. At that time almost every one would have said that this is impossible. Very much to our disappointment, we could not see the actual performance, but we were shown the data and records, so that there was no room for doubt left in our minds.

After I returned, we got together and concluded to rig up a lathe (24-inch swing) with a 5-h. p. motor, which we supposed would have ample power. We placed it on the next floor right above the lathe, running with a belt from the motor directly on the cone pulley at a high speed with back gear in. No countershaft was used. We commenced our experiments on a 4¾-inch diameter machinery steel shaft, such as we use for overarms on our milling machines, and it worked well. We got carriage travel on this job of 17 inches in one minute, taking a cut ⅛ inch deep. We could see that this was not the limit, but we had already consumed 10 horsepower for this one lathe and that was all the motor could stand.

I want to tell you a little more about this job. We had two Novo tools, one in front and one in back. We used the lead screw for feeding, and geared it up the same as for cutting five threads to the inch. Since that time, we decided to do away with this motor, as it was too small, and arranged for a 12-h. p. motor. I only mention this experiment in order to point out what we may have to look for in the near future as to power. Of course, this 4¾-inch shaft had all the advantages in its favor. It was short in comparison with its diameter and quite stiff. Two tools were used to counterbalance the strain. The material was uniform. Records like these cannot be made in every-day practice. Experiments of this kind also have

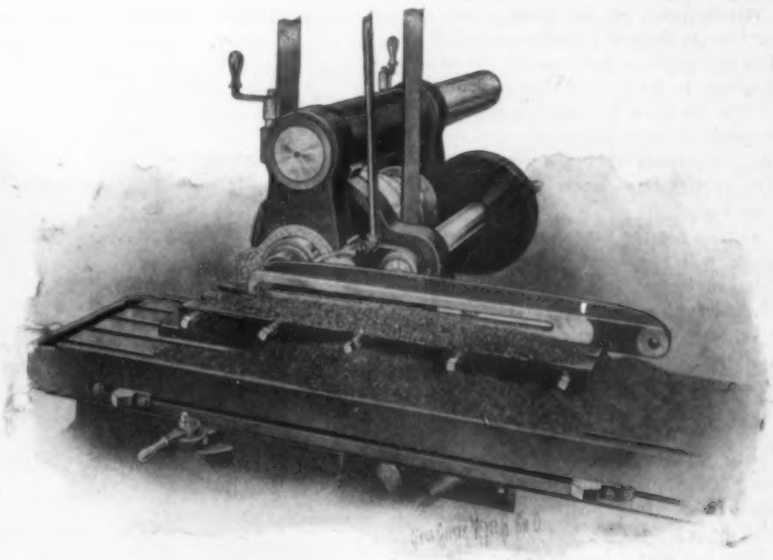


FIG. 2.—MILLING SLOTS INTO CAST IRON.

a good effect, in that they help to make things "speed-up" all around in the whole establishment.

We are not altogether through with this experiment yet. I feel that by the time we get to the end, we will turn the same shafts with the carriage traveling at 24 inches a minute, and do it all day long. On planer work we run light roughing cuts ⅛ inch deep, 70 and 80 feet per minute on cast iron, provided the material is fair. We use variable speed countershafts, which are absolutely necessary on planers, since finishing cuts are run at the

*Read at the meeting of the Cincinnati Metal Trades Association. Mr. Holz is president of the Cincinnati Milling Machine Co.

rate of 18 to 20 feet per minute on the same planer.

For some time I have been looking for simple means for testing the nature and hardness of material which we have to machine. In ordinary machine shops we have absolutely no means, and on that point we are completely in the dark. It sometimes appears to me, that while new tool steels are being supplied with increased hardness, the so-called "commercial material" comes correspondingly harder many times, and here is the point where our experience fails to guide us.

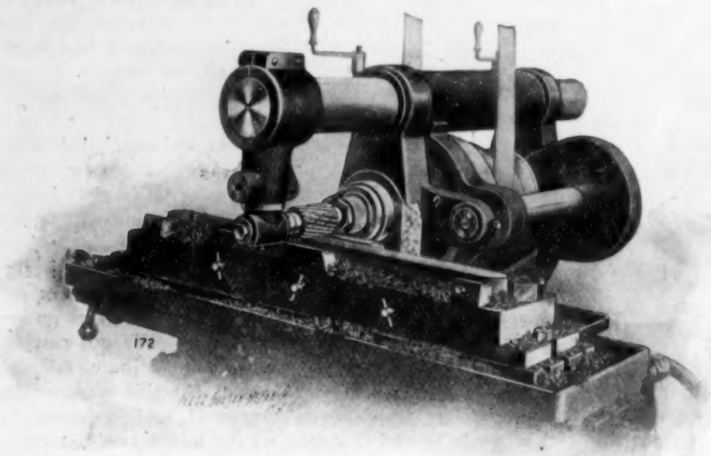


FIG. 3.—SLAB MILLING CAST IRON AT A FEED OF 9.2 IN. PER MINUTE.

In the shops of the Midvale Steel Co. I learned that the cutting speed is fixed by the tensile strength and elongation of the material. These people have the advantage in that they make their own materials and have facilities for testing them before they go into the machine shop, and, of course, higher efficiency can be obtained.

I am positive that many jobs throughout the country are done at the rate of 40 feet of surface speed a minute, when they could be done just as well at 60 and 80 feet per minute, and, on the other hand, the same job at another time is done at a surface speed of 40 feet per minute when it would be advantageous to do it at 30 feet per minute. The facilities for determining surface speeds, in most places, are also very crude; oftentimes they are simply left to the eyesight and good judgment of the workman.

I wish to see the time when on every machine will be placed a speed gauge which can be set for any diameter of work and from which the surface speed can be read direct, just as the time of day is read from the face of a clock.

Some machines are already provided with a good speed table, which is a step in the right direction, but I am sorry to say that few people take advantage of it. Its importance is certainly not as fully appreciated as it should be. I wish to cite an example to show how little importance is often attached to this matter of correct speeds: We furnish two clutch pulleys on our milling machine countershafs, which double the speed obtained through the cone steps and back gears to such a large variety and many different diameters of cutters for all grades of material, and when I visit shops throughout the country, I frequently come across a machine with only one belt running, and when I ask why the other pulley is not belted, the reply from the foreman is, that they do not need the other belt for their class of work, while at that same moment probably he is operating on a piece at a speed which is entirely too slow, or, possibly (but seldom) too fast for good practice.

The question of feeds is somewhat simpler as far as milling machines are concerned. Very seldom a cutter is injured by a feed unless it is abused. It is an old and mistaken idea that a cutter must be fed slow in order to preserve it. If we analyze this subject, we will find that the chip per tooth of a milling cutter is very small in comparison with the chip of a lathe or planer tool, and I would say right here that it is better for the cutter to give it a fast feed instead of a slow one. It is certainly better for any tool to cut into the surface instead of simply to rub over it, and the more positive and steady this feed is, the better it is for the cutter. This argument especially holds good for roughing out work. For finishing, a high speed may be applied and a finer feed used with finer teeth in the cutter. For roughing cuts, cutters with very coarse teeth to allow lots of room for the chips, should be used. On an ordinary class of work the medium coarse tooth cutter answers for both the roughing and finishing.

I have a few samples here to show what we do every day in our line; they help to show the success and economy of milling. I regret that we do not have a sufficient equipment of high speed cutters in our shop at present to enable me to show what these will accomplish, but I believe that you will find the material which is before me interesting, and you can each form your own conclusions as to how much the speeds could be safely increased if high speed steel cutters were used.

Fig. 1. This is about the severest test to which a milling machine can be put. The material is 90 carbon tool steel. Two pieces placed side by side are milled at one time. The total width of surface is 5 inches; the depth of cut is from 1-32 inch to 3-64 inch. The cutter is 3 inches diameter, ordinary tool steel, makes 56 revolutions per minute, feeding .050 inch per turn, which is a table feed of 2.8 inch per minute; limit of accuracy, .001 inch. The No. 2 plain miller does this work right along without any chatter. The finished surfaces are flat and must show a bearing on a surface plate before they pass inspection. The pieces are 8 inches long and two are held side by side in the fixture at one time. Total time for milling one piece is 2 minutes.

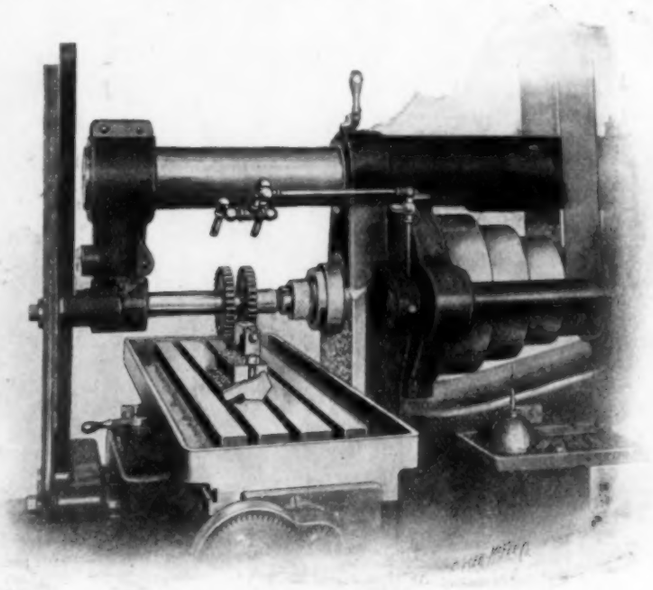


FIG. 4.—GANG MILLING STEEL CASTINGS.

Fig. 2. The slots are milled into solid cast iron bars 1 inch thick at a single cut, with a ¾-inch diameter 6-fluted end mill made of "Novo" steel, working at a surface speed of 66 feet—335 revolutions per minute, feeding .012 inch per turn of cutter—4-inch table travel per minute. The slots are 22 inches long, and it requires just 5½ minutes to make the cut. That is less time than it used to take to file the pieces when the slots were cast in.

Fig. 3. The cutter is 2½ inches diameter, ordinary tool steel, has nicked teeth, works at 46 r. p. m., takes a cut from ⅛ to 3-16 inch deep, at a feed of .200 inch per turn—that is, a table travel of 9.2 inches per minute. The pieces are 2½ inches wide. The sides are then finished true and to size with an ordinary tool steel end mill (not illustrated) working at 47 feet surface speed and at a feed of .250 inch per turn, with an actual table travel of 15 inches per minute.

The next two illustrations show a job of jig milling the adjustable dogs for tripping the feeds on our millers. The fixtures, or jigs, are very simple and inexpensive.

Fig. 4. (First operation.) The finished piece is 2⅞ inches long by 2 1-16 inches wide by ⅞ inch thick. It is finished all over, twelve surfaces in all, in two operations. This is the first, and finishes six surfaces. There are four cutters in the gang—largest 5 inches diameter; smallest 1¾ inches diameter, making 32 revolutions per minute for the first part of the cut, and 56 revolutions per minute after the large cutters are through. (The change in speed is made through the countershaft clutch, not by shifting belts.) Feed is .050 inch per turn, or 1.6 inches table travel per minute for the first part and 2.8 inches for the last part of the cut. This cut requires just four minutes for each piece.

Fig. 5. (Second operation.) This operation finishes the ends and the top of the piece. Four pieces are held in the fixture at one time. Largest cutters in gang 5½ inches diameter, smallest 2 inches diameter, working at 56 revolutions per minute—30 feet surface speed for the small cutters, feed .050 inch per turn, or 28 inches table travel per minute, removing 3-32 inch stock. The total width of surface milled is 5 inches. It takes just three minutes to mill these six surfaces, which, with the four minutes required to mill the six surfaces, as shown above, makes a total milling time of seven minutes each on these pieces.

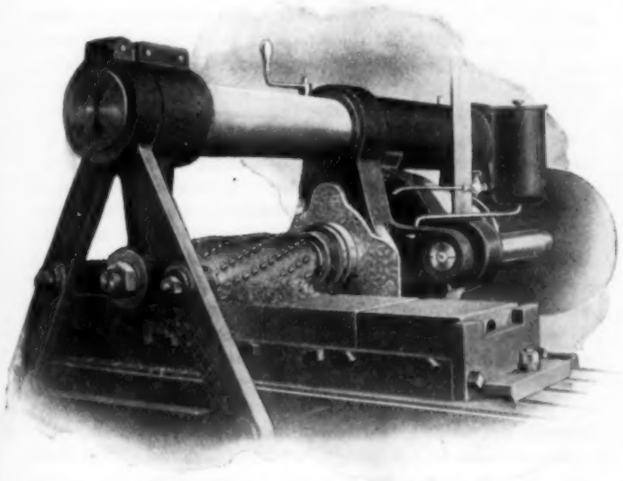


FIG. 6.—SLAB MILLING.

We do heavier work at correspondingly rapid rates on our larger millers. As an example of one of these, I will show the operation (Fig. 6) of roughing the top of vise housings. Most of you are, no doubt, already familiar with this, as we have used it quite extensively in our advertising. The cutter is of the Ingersoll patented type, 4½ inches diameter, working at a cutting speed of 40 feet per minute, in a cast iron surface 8¼ inches wide, taking a cut of 3-32 inch to ⅛ inch deep to remove scale; feed .252 inch per turn of cutter, which is equivalent to a table travel of 8½ inches per minute. That amounts to saying that the cast iron pieces 8¼ inches wide and 8½ inch long are surfaced in one minute.

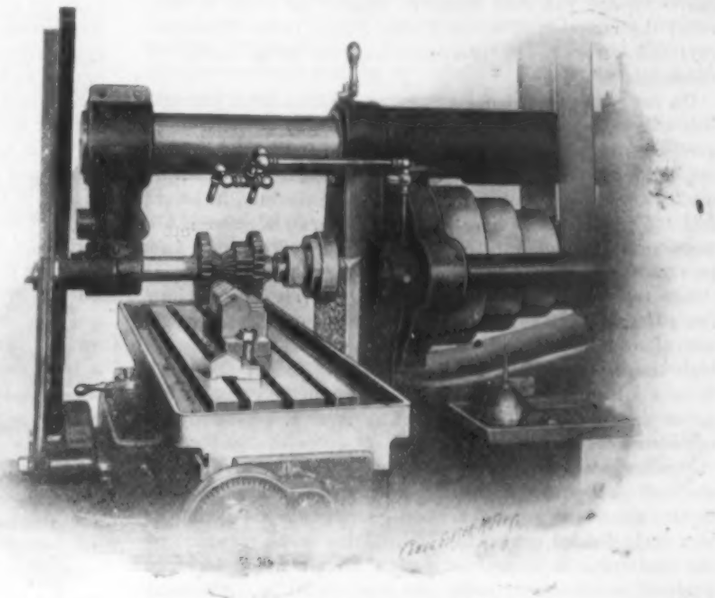


FIG. 5.—GANG MILLING STEEL CASTINGS.

Under an order received from the general offices of the American Sheet Steel Co. sixteen salaried men occupying clerical positions with the Ætna-Standard mills at Bridgeport, O., have been notified of their dismissal. The plant has been only partly operated for twelve months, and the entire force was not required. District Manager N. V. F. Wilson assured the men that their removal was only temporary, but he could not assure them that they would be taken back at any definite time.

The Rosedale Foundry Co., Allegheny, Pa., has recently closed with the Illinois Steel Co. a contract for 32 400-h. p. Playford improved chain grate stokers for the South Chicago works; also an order from the Kelly & Jones Co., Pittsburg, for four 250-h. p. Playford stokers, and a fourth consecutive order from the National Enameling & Stamping Co. for three 500-h. p. stokers for its steel works at Granite City, Ill.

The Economy Foundry & Machine Co.'s plant, Syracuse, N. Y., has been sold by the trustee in bankruptcy to C. H. Sanford, cashier of the National Bank of Syracuse. The company recently failed. It will be reorganized and the foundry started again.

The Beloit Iron Works, Beloit, Wis., have shipped from their plant one of the largest paper machines ever made in the United States, to the Thomas Paper Co., of Perfleet, Essex County, England. The machine is a box board maker, and represents a contract of about $100,000. It required a train of 25 cars to transport it to the seaport.

The Pioneer Brass Works, Indianapolis, Ind., has a finishing shop in connection with its foundry, in which it does job work and makes a few specialties, such as Rice's patent hose couplings for hose, from 1¼ to 3 inches, and Deed's metallic packing for piston rods. In its foundry the company makes castings from brass, phosphor bronze, and aluminum, and is at present furnishing castings to eleven automobile manufacturers.

THE USE OF THERMITE IN THE GAINING OF METALS.*

BY B. PALMER CALDWELL.

No sooner are discoveries made in any branch of science than the semi-scientific, semi-popular papers and, in a remarkably short time, the daily journals also light upon them and they form the subject of articles in which properties are ascribed to them far more wonderful than their discoverers had known, and brilliant futures predicted for them far rosier than their nearest friend had ever dared to dream. In proof of this, recall the reception given to Koch's lymph, to the Roentgen rays and very recently to radium and the whole family of radiferous substances.

Do not understand that I altogether condemn these journalistic efforts, for I do not. They are generally founded on a germ of truth, even though they appear to be wholly the product of a fertile imagination. Now, imagination is a good attribute for a scientist to cultivate; one thing is necessary, however, that the scientist draw a sharp line of separation between his facts and his fantasies. And so thermite has recently had its turn.

The subject, as given, would naturally divide my talk into two parts; the first dealing with metallurgy, or the gaining of metals, by means of thermite; the second, the production of high temperatures by means of thermite. But, as the latter is merely the result ot the heat liberated in the chemical reaction that causes the former, both parts must necessarily be considered together.

Now, what is thermite, and what is the nature of the chemical reaction which causes so much heat? Thermite is the name given to a mixture of iron oxide and the metal aluminum in a finely divided condition. The reaction is the reduction of the oxide of iron to metallic iron by the aluminum which is oxidized to aluminum oxide. As represented by a chemical equation the reaction is:

$$2Al + Fe_2O_3 = Al_2O_3 + 2Fe,$$

or if the ferroso-ferric oxide is taken:

$$8Al + 4Fe_2O_3 = Al_2O_3 + 8Fe,$$

We have, then, the formation of metallic iron which is in the molten state beneath a layer of molten slag—the aluminum oxide or corundum.

Why does this reaction take place? Berthelot, whose work in the subject of thermo-chemistry is classical, expressed in his *"Essai de Mechanique Chimique"* (l. xxix) what he called the law of "maximum work:" "Every chemical change accomplished without the addition of energy from without tends to the formation of that body, or system of bodies, the production of which is accompanied by the evolution of the maximum quantity of heat." This law he elsewhere states in other words as the "theorem of the necessity of reactions" thus: "Every chemical change, which can be accomplished without the aid of a preliminary action, or the addition of energy from without the system, necessarily occurs if it be accompanied by disengagement of heat." Thomsen, also, more than forty years ago, stated the law of "maximum work."

When viewed rigidly the law of maximum work is found wanting in some respects; nevertheless, the fact remains that when the physical conditions of comparable chemical processes are kept as nearly as possible constant, the process which involves the maximum production of heat very frequently occurs in preference to other processes, or occurs to a considerably greater extent than any of these other processes.

In the reaction before us, then, we may compare the heats of formation of, say, aluminum oxide and iron oxide from their respective elements. If the former is greater we may expect the decomposition of iron oxide by aluminum; if the latter is greater, the reverse reaction will take place. But first let me explain a term which is perhaps a technical one. What is meant by the heat of oxidation? The heat of oxidation of a substance is the quantity of heat produced by the complete oxidation of that substance to form those masses of the products of oxidation which are represented by the chemical formulæ of these products—in other words, the quantity of heat liberated in the combustion of chemically comparable quantities of combustible substances to the formation of chemically comparable quantities of the products of oxidation.

Let us therefore compare the heats of formation of iron oxide (Fe_2O_3) and aluminum oxide (Al_2O_3).

Oxide.	Heat in Calories.
$Al_2O_3 3H_2O$	594.0
$Fe_2O_3 3H_2O$	396.4

The difference is nearly 200 calories. By the law of maximum work we should expect the reaction to go as has been indicated. Experiment shows that it does, and that iron oxide is reduced by metallic aluminium to metallic iron; and a large quantity of heat is evolved in the reaction.

So much then for the reaction between iron oxide and metallic aluminium.

If this reaction takes place between these two substances (metal and oxide), does it also take place between others? One answer to this question is the trial of the experiment. But a study of the heats of formation of other oxides and the comparison of them with that of aluminium oxide will also serve the same purpose.

I will give the heats of formation of some oxides of metals and of a few oxides of non-metals. A comparison shows that the heat liberated in the formation of aluminium oxide (Al_2O_3) is far greater than in these cases, and hence, according to the law of maximum work, the tendency for that compound to be formed is very great. And experiment shows that the reaction does take place.

TABLE OF HEATS OF FORMATION OF CERTAIN OXIDES OF METALS AND NON-METALS.

Oxide.	Heat in Calories.
$Al_2O_3 3H_2O$	594.0
H_2O (solid)	69.8
N_2O_5 (solid)	13.1
SO_3 (gaseous)	71.0
CO_2 (gaseous)	94.3
$Fe_2O_3 3H_2O$	396.4
$MnOH_2O$	94.8
CaO	131.0
$CaOH_2O$	214.9
SrO	128.0
$SrOH_2O$	214.5
ZnO	85.3
$ZnOH_2O$	82.7
$NiOH_2O$	60.8
$CoOH_2O$	63.4
CuO	37.2

This then covers the metallurgical side of my subject. Of course you engineers will immediately ask about the costs, and no thought is necessary to make you see that this method of production of *e. g.*, iron would so far exceed in cost the ordinary method of reduction of the ore with coke, that its employment for the commercial production of iron is an impossibility, and doubtless always will be. But there is one point to be considered; iron made by the ordinary smelting process is never pure, but contains varying quantities of carbon, some combined in the shape of carbides, the rest graphitic. This iron is pure enough for all the ordinary purposes for which it is intended, but often pure iron is desired, and this thermite method gives it. In the obtaining of other metals like chromium, manganese, cobalt, nickel, which command higher prices, especially those which are used to impart certain properties to iron, this method may be of some commercial value.

It is the other side of the subject that promises more to the engineer, viz., the production of high temperatures, and to that I now turn.

We have seen that in the reaction between metallic aluminium and iron oxide a large *quantity of heat* is liberated. Now, if this heat can be confined within a small space, and is liberated all in a short time, then the *intensity* increases and we have *high temperature*. These two points: (1) The production of the heat through a confined space, and (2) the instantaneous production of it are fully met, so that we have in thermite a notable producer of high temperatures.

Goldschmidt claims that in a suitably constructed and yet simple apparatus a temperature of 3,000 degrees C. or 7,200 degrees F. can be obtained. The temperature of the electric arc has been variously estimated; it is probably between 3,000 degrees and 3,500 degrees C. The temperature reached in an electric furnace probably does not exceed 1,500 degrees or

*Read before the Louisiana Engineering Society.

2,000 degrees C. But the most important point is that this temperature of 3,000 degrees can be obtained by means of thermite in an instant of time, and can be applied conveniently over as small space as desired.

It is to this feature that I would especially call your attention. I am aware that most of you are not mechanical but civil engineers. But you may at any time be called upon to exercise the function of a mechanical, electrical, chemical, architectural or any other kind of an engineer; and I believe it can truly be said of the civil engineer that, chameleon-like, he changes his color quickly and naturally, and appears to advantage in all.

The application of thermite as a heat producer has so far been made to problems of iron welding, especially the welding of street car rails *in situ*, bridge beams and structural iron of all sorts, pipes, etc. The temperature of fusion of iron is around 1,600 degrees C., which is far below the 3,000 degrees claimed for this reaction. Other processes which require heat will readily suggest themselves to you, in which the application of thermite may prove advantageous.

A word should be said about the manipulation of the substances. In the production of metals the ore [oxide] is mixed with finely divided metallic aluminium and the mixture placed in some receptacle as a Hessian crucible. On the surface of the mixture is placed a little "kindling mixture," which is itself a mixture of barium peroxide and aluminium. On this is placed a "cartridge," which is a little pellet of the "kindling" mixture" with an inch strip of magnesium ribbon sticking out from its center. The magnesium ribbon is lighted with a match, and burns with the evolution of some heat. This heat serves to start the reaction between the barium peroxide and the metallic aluminium which evolves a larger quantity of heat. The heat suffices to start the main reaction—between the metallic aluminium and the oxide—which proceeds throughout the whole mass of the mixture with the evolution of a large quantity of heat. The crucible may now be turned upside down, and the molten metal will pour out together with the molten slag—aluminum oxide or corundum. Or the crucible may be allowed to cool, when it may be broken off with the solidified slag, leaving an ingot or button of the metal. In the use of thermite as a heat producer the manipulation is practically the same, varying with the nature and size of the pieces welded. Usually the parts are surrounded at the point of junction with sand, firebricks, etc., to confine the heat, and the thermite is placed within this improvised furnace.

The production of thermite is controlled by patents in all civilized countries. The substances can be obtained from the Chemische Thermo-Industrie G. m. b. H., Essen-Ruhr, Germany. In Germany the prices are: Thermite, 3.75 mk. per kilo.; kindling mixture, 6 mk. per kilo.; cartridges, 5.50 mk. per hundred.

The following demonstrations were made before the society:

1. The making of carbon-free iron.
2. The making of carbon-free manganese.
3. The making of carbon-free cobalt.
4. The making of carbon-free nickel.
5. The making of carbon-free chromium.
6. The heating of an iron plate. An iron plate ¾-inch thick was placed upon supports so that its underside could be seen. The thermite mixture was placed upon it in the space between three bricks and fired in the usual way. Immediately the underside of the plate became red, then white hot below where the reaction was taking place, while 2 inches away or less the plate was perfectly cold.
7. The melting of iron.

Some of the thermite mixture was placed in the bottom of a small Hessian crucible, and into this was pressed a rod of iron ¼ inch in diameter. The mixture was then fired. The rod melted down like wax.

John F. Allen, 370-372 Gerard Ave., New York, reports the following sales of complete Allen portable pneumatic riveting machines for the month of September: Manning, Maxwell & Moore, New York, 2 machines; Levering & Garrigues Co., New York; Jackson & Corbett, Chicago; Standard Railway Equipment Co., St. Louis; American Structural Steel Co., East Carnegie, Pa., and Thompson Iron Works, Philadelphia.

MEASURING THE POWER OF MACHINE TOOLS.

BY GEORGE E. WALSH.

Machine shop methods have changed so materially within the last decade that the mechanic has had to turn electrician to some extent in order to keep abreast of the times. Electrically-driven machines and tools are so commonly installed today in the large and small shops that possibly surprise would be caused by the absence of electrical power for operating them in any first-class shop. Yet the change has not come about except through mathematical demonstration of the higher efficiency of electrically-driven tools and the elimination of many old troubles and expenses.

The increased output of electric tools is nearly always followed by a corresponding decrease in the cost of operation. Tools and machines that are capable of doubling their output capacity can naturally be made far more economical in operation than those which have no margin of increase in capacity. Consequently in small shops where the output of the tools has a low fixed limit electric motor drive has found less favor than in the larger shops where the output has not reached its limit. Higher speeds and greater cutting capacity must inevitably reduce the cost of manufacturing, and many tools are now built with this in view. With motor drive the limit of cutting speed is measured only by the size and power of the motor.

The belt system of operating tools was always unsatisfactory in shops where high speeds were needed. Besides the delay caused by shifting and adjusting belts, there was always the troublesome difficulty of making the speed shift rapidly from high to low on separate and individual tools. The drive was uncertain and troublesome from many points of view. Yet the belt system is still in use in shops, and it will continue so for some time. There are certain classes of work that can be done satisfactorily with belt drive, but they are becoming more limited in quantity every year.

The construction of enormous modern machine tools introduced a new problem in the work of operation. In the manufacture of huge plates with angles that must be cut with mathematical exactness, and the construction of machinery containing castings so large that giant cranes must be erected to handle them, we have taxed the old method of operating tool machines by counter shafts and belts beyond the limit; the electrical drive is the only possible method of handling the new machines satisfactorily. Machine work is becoming every year more difficult and intricate, and yet larger and heavier.

The amount of power used by the different machine tools is determined by each individual shop for its own classes and conditions of work, but within the past few months some statistics have been obtained which will form reliable data for approximate general estimates. In operating machines in groups by motors allowances have to be made for the friction of the shafting and belting. Modern line shafting, however, is made in the best shops so that friction is reduced to a small figure. A 200-foot line shaft, 2½ inches diameter, can in many shops be turned by the hands when not belted up. Such a line shaft and its counters can be operated by electric power with about 1.5 h. p. The actual friction in this way is consequently small, and it does not make an important factor when some 26 hangers are adjusted to it, and running a group of machine tools. Thus in the Buffalo, Rochester & Pittsburg Railway shops at Du Bois, Pa., such a line shaft driving a group of nine machines consumed in a 15 minutes' test a maximum of 10.43 h. p. and a minimum of 0.88, giving an average of 4.6 h. p. In this group of machines there were small and large ones. The large ones included a heavy wheel press of 50 tons, a 72-inch wheel lathe, an 84-inch Niles boring mill, and a 60-inch planer. There were also an emery wheel, a small wheel press, a band-saw and a Pond radial drill in operation.

The question of increasing the load was further tested by throwing in other machines in succession, and measur-

ing the resulting amount of electric power taken. When a 42-inch lathe wheel and an 84-inch boring mill were belted to the shaft, the power on an average was raised to 6.9 h. p.; but this large increase was due to the fact that the two machines were doing work, and the boring and cutting machines consumed nearly as much power in starting up as all the others of the group did when in full operation.

The amount of power consumed in starting up the heavier machines varied in the different tests from a 2 h. p. or 3 h. p. to 15 h. p. or more. Thus an 18-inch slotting machine and a 62-inch planer required 15.5 h. p. to start up, but afterwards they ran smoothly with 5.2 h. p.

The testing of single machines is probably more important than that of groups, and the measurements of power more accurate. For instance, in operating a planer and slotting machine together with drill presses there is always some difficulty experienced in apportioning the power owing to the constant shifting of the load caused by the reversals of the planer and the slotter. The maximum amount of power used for the reversals brought the average up to a high figure.

In starting up the small tools the loss first experienced is quite large. A single 40-inch wheel lathe with one tool cutting will, for example, require nearly 5 h. p., although steady running may later be made on ½ h. p. or a maximum of 0.7. A 79-inch wheel lathe, with two tools taking roughing cuts on a pair of drivers, has frequently been operated on 4 h. p. after it was once well under way.

Modern heavy planers and slotters require, as a rule, about the maximum of power. A 60-inch planer, while machining a cast-iron cylinder, required at reversal 8.5 h. p., but in the ordinary running 2 h. p. was sufficient. This constant shifting and variation of the load for running and reversal makes the operation of a planer by electric power far more economical than by any other method. The saving is considerable in the course of a day. Likewise an 18-inch slotter that took 0.03 h. p. for running with tools cutting steel required at reversals 1.2 h. p. This shows clearly the difficulties in the way of grouping these machines with others to be operated by a line shaft where the speed is more or less constant. Few tools shift the load so rapidly and continuously as these.

In some shops the grouping of machines to be operated by electric power has been so carefully worked out that the maximum shifting of the load of any group is comparatively small. Slotters and planers are grouped together so small that the reversals come at certain intervals simultaneously or separately. In this way the load can be regulated according to needs. By the old system of belts, where the maximum of reversal of both of these machines grouped together came simultaneously, the available power was frequently temporarily exhausted and the machines brought almost to a standstill. To prevent any such accident the minimum of power employed had to be much higher than would be consumed in the ordinary running. The resultant waste of energy was steady and quite large.

In the modern machine shop, grouping the machine so they can be operated together or singly by electric power is one of the most important factors. Experience has shown that machines which carry about the same load up to a given maximum can best be grouped together, while those which shift the load frequently between wide extremes should be operated either singly or in pairs or groups by themselves. Thus, running emery wheels, drills, presses, boring mills, planers and slotters in a single group would not produce good results either in operation or in cost. Tool grinders, milling machines, drill presses, rod drills, and turret lathes are operated in single groups with excellent efficiency. In fact, a 16-in. lathe, a drill press, and a grinder have frequently been operated together in a group at an expenditure of only 1.9 h. p. This, too, in the face of the fact that the grinder alone took at starting up nearly double the amount of power required to run the entire group when in motion.

There is a wide variation in tools run by any power, and this must be considered in estimating the measurements of the power needed. While the difference between the starting-up resistance and the running resistance of a tool grinder was nearly 1 to 5, a 20-inch lathe cutting steel shows a ratio of only about 1 to 2; the starting-up power required by the lathe was 4.7 h. p., and the running power 2.5 h. p.

This sort of study in the power required by electrically-driven machine tools could be carried on indefinitely, and it probably will as new experiments are made. By means of ordinary electrical instruments exact measurements can be made of the amount of power used; but under the old methods the horsepower consumed for operating any group or single machine was largely a matter of guesswork. There is, of course, a certain amount of error that will creep in, but this is so small, or else it can be so readily corrected, that it will not materially alter the conclusions.—[American Electrician.

EASTERN PENNSYLVANIA.

HARRISBURG, Oct. 4.—The depression in the iron industry continues and furnaces are being closed down in every one of the valleys of Eastern Pennsylvania. The companies making pig iron for the general market are taking energetic steps for curtailment of output.

The puddle mills are still working and the steel works in various counties are making their full tonnage. Orders keep up at many works, especially at large plants, but they have plenty of iron in sight.

Among the stacks which suspended in the past fortnight are two Lackawannas at Lebanon, making five idle; one Paxton in Harrisburg; one Thomas at Alburtis; one Crane at Catasauqua. The Junjata valley has hardly an active furnace and the Pennsylvania Steel and one Central are the only busy ones in the lower Susquehanna. Bethlehem continues busy. Robesonia furnace will be blown out in a few days for relining. Its campaign has been nearly two years and the production has run about 1,000 tons a week.

The stories about the removal of the Pencoyd bridge works of the American Bridge Co. to Economy are baseless. There is no truth in reports of a general shut-down at either Phœnixville, Coatesville or Harrisburg. The plate mills in these places have considerable work ahead.

At Chester ground has been broken for the building of a steel casting plant by the newly formed Delaware River Steel Casting Co. All of the numerous steel casting works in and about Chester are working full time and busy on large orders.

On Sept. 28, the Susquehanna Iron & Steel Co. started up two of its rolling mills at Columbia, which had been idle since the middle of August.

The Pennsylvania Railroad is increasing the equipment at its Altoona shops, and two 125-h. p. engines for a new electrical plant have been ordered from the Harrisburg Foundry & Machine Works.

The Duncannon Iron Co. has shut down part of its plant because of lack of orders.

The Lackawanna Steel Co. is building a large ore roaster at its North Cornwall furnace.

The Harrisburg Pipe & Pipe Bending Co. will start another open-hearth furnace this fall. It now has one 30-ton furnace in operation.

The State last week granted a charter to the Globe Iron Works, of Erie. The company has a capital of $100,000 and the incorporators are F. F. Curtze, F. Carrick and A. A. Claus, all of Erie.

The Phelps Gasoline Engine & Machine Works, Phelps, N. Y., whose recent incorporation has been noted, changed from a partnership to a corporation, with a view of increasing its facilities for meeting the growing demand for its goods. If the company succeeds in interesting sufficient capital to enable it to do so, it will erect a new plant. For the immediate future it will utilize its present quarters.

INDUSTRIAL SUMMARY.

[If you are in need of machinery of any description, please notify *The Iron Trade Review*, and we will put you in communication with our advertisers at once.]

New Buyers in the Market and Some of Their Wants:—

The W. L. Cassaday Mfg. Co., South Bend, Ind., has been incorporated with a capital of $9,000 to manufacture engines.

The Curtis & Wilson Mfg. Co., New York, has been incorporated with a capital of $20,000. The directors are: W. G. Wilson and G. W. Curtis, Bayonne, N. J., and F. P. Curtis, New Brighton, N. Y.

The Buckeye Gas & Gasoline Co., Aurora, Ill., has been incorporated. The officers of the company are: Peter Michels, president; George J. Buckeye, vice president; Jacob Berline, of Chicago, superintendent.

The American Standard Steel Fitting Co., Milwaukee, has been incorporated with a capital of $100,000. The incorporators are: Joseph Schurek, Daniel Homer and Franklin Giesler.

The Guysborough Iron Co. has been organized at Kittery, Me., to conduct a general mining business. Capital $125,000; nothing paid in. The promoters are Harold P. Knowlton, Malden, Mass.; Albert E. Knowlton, Portland, Me.; William R. O'Neil, president; Percy L. Andrews, treasurer; Ernest L. Chaney, Kittery.

The Hart Steel Co., of New York City, capital $10,000, has been incorporated. The directors are: L. B. Thornburg, H. H. Abbott, and George Brent, New York.

Articles of incorporation have been filed by the Meriden Iron Co., Minneapolis; capital $25,000. The incorporators are: Russell M. Bennett, Edmund J. Longyear and Norman C. Richardson, all of Minneapolis.

Under the laws of Delaware the Toledo Stove Co., Toledo, O., has been reorganized and its capital increased from $100,000 to $500,000, half common and half preferred.

The Sinuous Tube Boiler Co., Toledo, O., has been incorporated with a capital of $60,000, fully paid in, and will manufacture steam generators, engines and water heaters and do a general repair business.

The capital stock of the Birmingham Pipe & Casting Co. has been increased from $55,000 to $150,000. The members of the company are: Joseph Winterbotham, J. F. Hatcher, H. K. Spencer, S. S. Knight, E. W. Abrams and E. B. Hatcher.

The Kenosha Brass & Iron Works, Kenosha, Wis., has been incorporated with a capital of $10,000.

Young's Wrought Iron Works has been organized at Rochester, N. Y. to manufacture and traffic in iron and steel. Capital, $4,000.

Lorenz & Louis Mayer, who since 1896 have been operating their foundry and machine shop in Mankato, Minn., as partners, have decided to form a corporation. The new company is to be capitalized at $125,000. The company will sell $50,000 worth of preferred stock which is to be used in improving the plant and installing new machinery.

The Diamond Wire Web Co., capital $25,000, has been organized at Columbus, O., by H. H. Tremain, Nellie Wright McCollip, Wright McCollip, W. H. Tremain and W. W. McCollip.

The A. F. Armstrong Co., Kokomo, Ind., has been incorporated with a capital stock of $9,000. The company will manufacture engines, bicycles, etc.

Fires and Accidents:—

Fire at the plant of the Danville Foundry & Machine Works, Danville, Ill., Sept. 24, caused damage to the extent of $1,800, fully covered by insurance.

The plant of the American Switch & Frog Co., Centropolis near Kansas City, Mo., was partially destroyed by fire Sept. 28; loss $25,000. The plant was purchased by the American Switch & Frog Co. from the Cookson Mfg. Co. about six months ago. A brick building was being remodeled and an iron addition was being built. The plant had not yet been put in operation. The brick building was a total loss, but the iron addition was saved.

The stock rooms, pattern shop and several other departments, composing the entire western half of the Novelty Iron Works, Canton, O., were destroyed by fire Oct. 1; loss about $40,000. This is the second time within two years that the works have been partly destroyed by fire. The plant will be rebuilt.

Sharp Brothers' machine shops, Harrisonville, Mo., burned Sept. 25. Loss about $20,000.

The Woodside Bros.' foundry, Port Arthur, Ont., was totally destroyed by fire Sept. 29; loss, $15,000; insurance, $4,000.

The boiler house of the Iroquois Iron Works, Buffalo, was burned Sept. 30. Loss $30,000, covered by insurance.

A destructive fire visited Saginaw, Mich., Sept. 28. The foundry and machine shop of A. F. Bartlett & Co. were damaged. The Christy Buggy Co. lost part of its machinery.

Fire on Sept. 27 destroyed the plant of the Williamson Foundry Co., Covington, Ky. Loss $2,500; no insurance.

New Construction:—

The Welsh Machine & Well Works Co., Ltd., Welsh, La., whose plant was recently destroyed by fire, will rebuild as soon as insurance is adjusted. The new plant will be larger and a fireproof structure. The company had a very good business for the eight months that it had been in business. The plant was new throughout and was employing 12 men. The loss was between $16,000 and $18,000, with $7,000 insurance. The fire was caused by spontaneous combustion.

A large force of men is employed on the plant of the Baldt Steel Co., which is being constructed at New Castle, Del. The plant will be the largest of the kind in the East.

Substantial progress has been made in the construction of the plant of the Ohio Valley Steel Foundry Co. at Paden City, Va. The main building is an all steel structure 79 feet wide by 600 feet long, with an addition 60 feet wide by 300 feet long. In the northern end of this building will be located a foundry covering 79 feet by 300 feet. In the southern section will be a blooming mill occupying a space 79 feet by 300 feet. Adjoining the main foundry and mill building will be an open-hearth department, which will be an all steel building 60 feet by 500 feet and will contain four basic open-hearth furnaces and one acid open-hearth furnace. The power house will be 40 feet by 125 feet. The Niles Tool Works Co. is furnishing a complete machine shop outfit. The open-hearth furnaces will be fired by natural gas, which will also be used in the power building. The company will employ about 500 men and expects to be running in part by Nov. 1, but all departments will not be in operation before Jan. 1.

The Globe Fence Co., Hudson, Mich., is preparing to erect buildings for a new plant. The architect has looked over the site, and will soon submit plans to the company. It is expected that the plant will be finished by Jan. 1, 1904.

B. B. Potter, president of the North Star Iron Works, Griffith, Ind., has purchased a site at Hammond, Ind., and will erect a foundry and machine shop.

T. W. Hine has obtained a lease of site on First Ave., Eureka, Cal., and as soon as the lot can be cleared and graded will commence the erection of a machine shop to be occupied by the California Iron Works, now located at First and F Sts. The building will be 60x110 feet. The machinery now in use at the present location will be moved to the new building and to it will be added a number of new machine tools and a traveling electric crane.

The Moline Scale Co., Moline, Ill., will rebuild its plant recently destroyed by fire. It has not been decided whether the present site will be used or a new one purchased.

The plant of Wickham & Chapman, piano plate manufacturers, Springfield, O., recently destroyed by fire, will be rebuilt. As soon as the debris can be cleared off

preparations for a new structure will be made, but it may not be possible to do more than put in the foundation this winter.

The stockholders of the Northwestern Barb Wire Co., Sterling, Ill., has decided to increase the capital from $100,000 to $175,000 and to largely increase the capacity of the plant. A new site will be obtained in Sterling or Rock Falls and new buildings erected.

Robert Holmes & Bro. have purchased an 8-acre tract at Danville, Ill., with the intention of moving their machine and boiler works from Danville to Tilton, Ia. A plant for light work will be maintained at Danville, Ill. It is expected that a larger plant will be established at Tilton, but details have not been decided upon.

The Milwaukee Bridge Co., Milwaukee, has been granted a permit to build a foundry at a cost of $2,000.

Hiram Friendenwald will build a one-story machine shop, brick construction, 27x32 feet, at Baltimore. The cost will be $1,400.

Work has been commenced on the new machine shop to be erected at West Mystic, Conn., for the occupancy of the Hasbrouck Motor Works, to be moved from Yonkers, N. Y., to West Mystic. The Hasbrouck Co., reorganized and incorporated under Connecticut laws, intends to carry on the marine engine business in all its branches on a large scale.

Work has been begun on the construction of the new building 60x60 feet, which is to be an addition to the foundry of the Frank C. Patten Co., of Sycamore, Ill. The foundry is behind in its orders and the work of completing the addition is being hurried. The company builds gasoline engines.

The new plant for the Olds Gasoline Engine Works, Lansing, Mich., now being erected, will have a main building devoted to storage, distribution and machine departments, 500x132 feet, with a wing devoted to testing, painting and shipping departments, 346x60 feet. The executive and engineering departments will be accommodated in a separate building 34x50 feet. The frame of the building is steel, with steel roof trusses. A complete system of cranes will be installed. The contract for the steel work has been let to the Variety Iron Works, of Cleveland, and for the electric cranes to the Great Northern Engineering Works at Detroit. The total cost of the building and equipment will be $175,000.

Work on the Bessemer Drop Forge Co.'s plant at Bessemer, Ala., will be pushed rapidly until completed, which will be about Dec. 1. The main building will be 75x100 feet. The capital is $50,000, and the stockholders are: W. E. Nicholas; L. A. Ezell, V. Ferguson and T. M. Stewart. The plant will employ between 75 and 100 men, manufacturing car couplings, all kinds of castings and fittings and steam hammers.

The Pennsylvania Railroad Co. has decided upon the construction of a large machine shop and roundhouse at Aspinwall on the West Penn division. The plant is designed to take care of all the repair work on the West Penn, and will result in the removal of the present shops near Bennett to the new location.

The new addition recently built to the plant of the Pioneer Stove Co., Columbus, O., is about completed and will be ready for occupancy within a month. The addition will allow the company to almost double its capacity.

J. A. & P. E. Dutcher will build a foundry at Clinton St., Milwaukee, at a cost of $8,000.

The Georgia Car & Mfg. Co., has very nearly completed an iron foundry at Savannah, Ga. The plant was built at a cost of $8,000, and will soon be in operation.

The Angelica Iron Co., in which a number of capitalists of Reading, Pa., are interested, has been organized, and has obtained a site at Milmont, Pa., where a rolling mill will be built.

W. J. Perkins will build a foundry on North Front St., Grand Rapids, Mich., at a cost of $2,500.

The Huntsville Foundry & Machine Works are building an addition to their foundry at Huntsville, Tenn. A number of other improvements are contemplated.

General Industrial Notes:—

Lincoln & Williams, Boston, are the new owners of the Field No. 2 Tack Works, Taunton, Mass., having purchased the plant from the syndicate that secured it at the recent sale of the Atlas Corporation's property in that city.

The affairs of the Mossberg & Granville Co., Providence, R. I., have been wound up, and its successor, the Standard Machinery Co., has been incorporated with a capital stock of $100,000 by the following incorporators: John T. Maguire, of Pawtucket; Michael J. Houlihan, of Providence; Frank Mossberg, of Attleboro, and Thomas Z. Lee, of Woonsocket. The new company has acquired the entire assets of the Mossberg & Granville Co., and will do a general machinery manufacturing business. The plant has been remodeled and enlarged, and will have 150 employes.

The Bellefontaine Foundry & Machine Co., Bellefontaine, O., recently incorporated, has elected the following officers: R. T. Tremain, president; Robert Colton, vice president; Chas. B. Harner, secretary and treasurer; Geo. E. Turner, superintendent. Mr. Tremain was formerly of the American Steel Shovel Co. The company has 17 acres located on the Big Four and Ohio Central railroads, and its buildings are as follows: Main building, 84x92; foundry, 84x84; forge and power building, 36x58. The plant will be in operation in two weeks.

The Birmingham rolling mill of the Republic Iron & Steel Co., has resumed operations after being idle since June.

The pipe iron plant of the Central Foundry Co., Birmingham, Ala., which has been shut down for some time, will resume operations at an early date.

The rebuilt plant of the Sligo Iron & Steel Co., which was dismantled in Pittsburg in order to make room for the Wabash railroad and moved to Connellsville, rolled its first iron Sept. 29. Fifty men are now employed and when the plant is completed 500 men will be given work.

No. 3 blast furnace of the E. & G. Brooke Iron Co., Birdsboro, Pa., was blown out Oct. 1.

The proposition to organize a new corporation, to be known as the Toledo Solid Steel Co., is beginning to take tangible shape at Toledo, O. It is understood that the promoters have obtained an option on a plant and that $100,000 of the proposed stock, $250,000, has been subscribed.

Alterations are at present being made at the New York Edison Co.'s new Waterside Station, at 38th St., 39th St., and 1st Avenue, New York City. All of the 52 boilers contained in this plant are to be extended 2 feet, so that the grate surface of 87½ square feet will be increased to 112½ square feet. Most of the grates used in this station are the Gibson patent Dumping Grates manufactured by the Gibson Iron Works, of Jersey City. This company will also furnish the grates for the extension of the 52 boilers. The New York Edison Co. is using some 5,000 square feet of this type of grate at its different plants, and 36 100-h. p. boilers in the power house of the new Interborough Railroad (underground) of Manhattan will be equipped with this grate. The Brooklyn Rapid Transit Co. is also installing 2,400 square feet of this grate in its new power house at 1st Ave. and 3d St., Brooklyn.

By a deal just closed at Racine, Wis., the Great Western Mfg. Co., of Laporte, Ind., which has a branch in Indianapolis, has purchased the entire plant of the Wisconsin Wheel Works, a company with an output of 36,000 wheels annually and a payroll of 150 employes. The plant will be moved from Racine to Laporte.

The Wisconsin & Michigan railroad a few days ago hauled a train load of thirty cars of ore to Peshtigo to be shipped to Chicago by car ferries. The company is making a strong bid for the ore business and will run ore trains continually.